DOCUMENT RESUME

ED 318 508 JC 900 225

AUTHOR Spanbauer, Stanley J.; Hillman, Jo Ann
TITLE Quality First in Education... Why Not? Using Quality and Productivity Methods To Improve Schools.
INSTITUTION Fox Valley Technical Coll., Appleton, WI.
PUB DATE 87
NOTE 215p.
AVAILABLE FROM FVTC Bookstore, Fox Valley Technical College, 1825 N. Bluemound Dr., P.O. Box 2277, Appleton, WI 54913-2277.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC09 Plus Postage.
DESCRIPTORS College School Cooperation; Community Colleges; Educational Economics; *Educational Improvement; *Educational Objectives; Educational Planning; Educational Quality; Educational Strategies; Models; Program Descriptions; *Quality Control; Technical Education; Two Year Colleges; Vocational Schools

ABSTRACT

A description is provided of the implementation at Fox Valley Technical College (FVTC), Wisconsin, of the Quality First Process Model, which was adapted from a model commonly used in manufacturing and service industries. The model uses private sector quality and productivity procedures and new management styles to serve students more effectively, create a better environment for students and employees, and maintain a cost-effective organization. The book's 10 chapters contain information on the following: (1) background information on Quality First processes and productivity models; (2) elements of the Philip B. Crosby quality model and FVTC's implementation of Crosby's 14-step process; (3) effective strategic planning; (4) a curriculum development approach which supports competency-based education; (5) a perpetual enrollment/graduation plan; (6) economic development; (7) the use of technology in education; (8) partnerships between technical colleges and high schools and four-year universities; (9) responsibilities of the Quality First instructor in the technical college; and (10) special challenges faced when implementing formal quality processes. Appendixes include an acronym reference list, recommended books on quality and productivity, initial long-range targets, an implementation timeline, the coordinator job description, key guiding principles, Crosby's definition of "Zero Defects," and a list of the members of the FVTC District Planning Council. (WJT)

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Quality First in Education. . .Why Not?

Using Quality and Productivity Methods to Improve Schools

By Stanley J. Spanbauer, Ph.D.

With the assistance of Jo Ann Hillman

In Cooperation with the Faculty and Staff of the Fox Valley Technical College

JC 900 225

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About the Author

Stanley J. Spanbauer has twenty-four years of experience in post-secondary technical college education. He was Director of Instruction at Fox Valley Technical College (FVTC), Appleton, Wisconsin, for sixteen years, and currently is completing his fifth year as Chief Executive Officer/District Director at the College. He is past president and a member of the Board of Directors of the Midwest Association for Individualized Instruction.

Under his leadership, FVTC has gained a national reputation for its innovations particularly in instructional methodology and computer-based education. The college currently enrolls over 45,000 full- and part-time students in a perpetual enrollment/graduation system.

Since 1985, he has led FVTC faculty and staff in the implementation of a quality first process at the college--the first public college in the country to initiate a formal quality process in its service and instructional components.

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By Stanley J. Spanbauer, Ph.D.

With the assistance of Jo Ann Hillman

In cooperation with the Faculty and Staff of the Fox Valley Technical College

Published by the Fox Valley Technical College Foundation

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Second printing, May 1988

Printed in the United States of America.

Acknowledgements

Many people from throughout Fox Valley Technical College and the community provided invaluable assistance in bringing this publication from concept to completion. Their contributions are gratefully acknowledged.

Special recognition is given to the following people:

- Editorial Review - Lorraine Endres, Jon Hardt, Terri Langan, and Maija Penikis
- Graphic Art Work - Mary Ehman
- Information Processing - Jean Reed and Nancy Smith
- Technical Assistance - Judy Brown, Steve Nagy, and FVTC Printing Faculty
- Photographic Services - Dave Bunnow and Gary Kiehne

Dedication

This book is dedicated . . .

To the faculty, staff, and students of the Fox Valley Technical College. Their enthusiasm for and commitment to excellence is the impetus for innovation which has distinguished FVTC.

And to the Fox Valley Vocational, Technical and Adult Education District Board. Their dedication and support has created the environment to foster continual growth.

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Preface

Over one-third of the United States population is involved in education--either as students or as employees. Because of its overriding importance to so many people, education demands a major commitment of resources at the local, state, and federal levels.

One of the most serious challenges facing education is the lack of financial resources. Taxpayers are crying for local relief. State aids have been slashed. Federal support has diminished. The media has blasted the decline of quality at all levels of education. In comparison with other countries and the private sector, American education is depicted as being in serious trouble. Chaos has engulfed education at all levels.

The educational system is made up of a complex of teachers, each responsible for a small group of students, along with administrators, counselors, and other support staff to assist in the process. Most of these educators view the current financial state in a pessimistic way. They believe that improvement in education is blocked by the need for constantly increasing funds and an unwillingness by the taxpayers to provide resources. At the same time, education is faced with new challenges and increased opportunities because of social, economical, and political changes.

If educators are to meet the increased challenges and opportunities, they must improve productivity so that the available resources are targeted to these emerging needs. This will be difficult since education has a clear record of declining productivity levels. However, productivity levels in the private sector have made

dramatic advances. Education can take a lesson from industry.

Because the problem is cultural, there needs to be a different approach. The attitude to constantly improve quality and productivity must be ingrained in the very culture in which educators work. Those in command must realize that additional resources can come only when more is accomplished per educator this year than last. This can be done by applying business and industry models of quality and productivity at the very core of education.

This book describes a Quality First process which has been implemented in an institution of higher education in Wisconsin. A model used commonly in manufacturing and service industries both in this country and abroad has been adapted. The assumption is that the way to cope with increased costs is to improve productivity. Proven systems which incorporate science and technology, capital and management to improve productivity per person and reduce overall costs are employed.

Quality first methodology is the latest investment in new and innovative tools introduced at Fox Valley Technical College. This book focuses on this latest endeavor and introduces the reader to other innovative approaches that collectively make the FVTC environment notable as educational excellence is pursued.

Introduction

Can the techniques and processes of quality and productivity be transplanted successfully from the private sector to public higher education?

Is it possible to use industrial models in the design of curriculum and in the scheduling and delivery of instruction at the post-secondary level?

Do Quality First processes used in the business world to increase productivity improve the management and operation of schools of higher learning?

The vocational-technical college of the future must be organized and managed in order for it to become as fluid as the modern society it is to serve. It must manifest management competencies so that decisions are not made by chance but with careful research and planning. Its operation and management must include processes and techniques which lead to greater productivity while meeting the needs of its customers--students attending classes and employers who hire graduates and use the services of the school.

Such a school cannot be designed around traditional concepts. It must be planned around known deficiencies found in education as well as in other public agencies and the private sector. The school of tomorrow must increase its productivity by serving students in cost-effective ways. It must strive to improve management practices through the implementation of quality processes which are common to the private sector. It must understand that quality principles from business and industry, which have led to greater productivity and

Quality principles from business and industry . . . are also feasible in education . . . .

increased cost savings, are also feasible in education without sacrificing learning/teaching effectiveness.

Most schools of higher education are not taking advantage of advancing technology. They have not adapted quality and productivity methods from business into their management systems. This book is written with the assumption that the progressive schools of tomorrow will be highly sophisticated institutions using high technology, including elaborate computer networks and sophisticated telecommunications systems. It also assumes that such schools will embrace private sector techniques to serve students more effectively without significantly increasing costs.

This book describes a school of higher education which has implemented a formal "quality first" process.

This book describes a school of higher education which has implemented a formal Quality First process, the first of its kind using private sector quality and productivity procedures. School officials believe that by instituting these quality processes, there will be increased effectiveness in serving their customers. The goal is to create a better environment for students and employees alike, while operating a cost-effective organization and producing job-ready graduates. Using Quality First processes from exemplary business firms, the school has instituted new management and organizational styles which provide more effective and efficient services to students and employees.

Chapter One presents background information of the Quality First processes and productivity models being developed and implemented. The Philip B. Crosby model is being used to implement the quality process. Crosby Quality Colleges are located throughout the United States and in several foreign countries. Crosby's processes have been implemented in several major service organizations and are adaptable to educational institutions. Several employees of the model school were trained at Crosby Quality College

and Crosby's instructional materials were used in many of the internal training activities.

Crosby's 14-step model described in Chapter Two was used as the framework for implementing the process.

In addition to integrating these quality concepts into school management and operations, private sector methods of design and productivity are incorporated. Certain pyramids of quality are visible. These foundations are found in occupational colleges generally recognized as being progressive and exemplary:

- **Formal Strategic Planning Processes**
- **Competency-Based Curricula**
- **Multiple Entry/Multiple Exit Delivery Systems**
- **Initiatives with Business and Industry**
- **Informational Systems in Teaching and Managing**
- **Partnerships with Other Levels of Education**

The first of these quality elements is an effective strategic planning process. Chapter Three describes the planning model which is the cornerstone for establishing long-range goals, operational plans, and individual management objectives within the school. Linking the planning process with budget development is essential to ensure proper resource allocation.

Another important hallmark of quality, especially in a college which focuses on occupational education, is the use of competency-based curricula. "Competency" is the ability to perform at an acceptable level. It is a qualitative term, rather than a descriptive level of job activity. It is the ability of a worker to perform job skills by completing certain job tasks efficiently. Competency-based instruction, therefore, refers to an approach used to determine what skills should be taught to future workers and how achievement is evaluated. Information on designing this type of curriculum is found in Chapter Four.

Once a competency-based curriculum has been developed, an efficient system for enrolling students is needed. Many educators believe that a multiple entry/multiple exit system is the best method since it permits the learner to enter the educational setting at times other than only at the beginning of the traditional school term. In the model college, the multiple entry/exit system is called Perpetual Enrollment/Graduation (PEG). Entry points under this concept are variable and frequent occurring every three, six, nine, twelve, or eighteen weeks. Some individualized courses are structured to permit daily enrollment. Perpetual graduation is the multiple exit facet of this concept; in its most narrow context, it is a mirror of multiple entry. As in perpetual enrollment, the learners graduate at various times. PEG, therefore, is an instructional system presented in a flexible manner, personalized and individualized to student needs. It allows students to move through courses at their own pace, consistent with their ability and motivation. An explanation of the school's Perpetual Enrollment/Graduation process is found in Chapter Five.

Collaborative ventures between schools and the private sector . . . economic development.

Collaborative ventures between schools and the private sector are commonly called economic development activities. They involve efforts to improve the productivity and profitability of business and to create new jobs and qualified workers to fill them. Chapter Six outlines the role of the modern technical college in attracting new businesses and in helping existing businesses to expand and become more productive. In addition, employer/school relationships are discussed, and a model for economic development is presented. A unique economic development venture featuring a technical-research-innovation park is described. That enterprise has evolved from the assumption that an industrial park which has a defined cooperative arrangement with a comprehensive technical college will have a better chance to succeed than one that does not have such an arrangement.

Stressing occupational preparation, Chapter Seven describes new ways to use technology in higher education. The application of information systems in computer-based education and school management is discussed. It shows how a school can incorporate technology to assist in both teaching and managing. International Business Machines Corporation (IBM) showcases the model college as an exemplary computer technology environment. Educators from throughout the country have adapted the school's computer software to their schools.

Chapter Eight outlines the rationale for two-year technical colleges becoming involved in partnerships with local high schools and four-year colleges and universities. This articulation process involves a planned system for communications, curriculum development, program coordination, and student appraisal which simplifies the transition of students between secondary schools and technical colleges and between the two-year schools and the four-year colleges and universities. An explanation of dual credit and 2+2 programs is given.

The model technical college used in this book is an example of a two-year school of higher education which has adopted the Quality First process. The school has chosen to embrace techniques and processes used successfully in business and industry for all aspects of its operation and management. Included is the integration of quality and productivity principles into curriculum and instruction.

Quality and productivity principles are integrated into curriculum and instruction.

The school, Fox Valley Technical College offers nearly 70 occupational programs representing hundreds of courses of study, including a full range of associate degree and vocational programs. It is fully accredited by the North Central Accrediting Agency for Colleges and Universities. In 1986 FVTC received national acclaim as one of the top two-year technical colleges in the na-

Most important was the willingness of the faculty and staff to depart from traditional practices and design a school which uses business and industry practices.

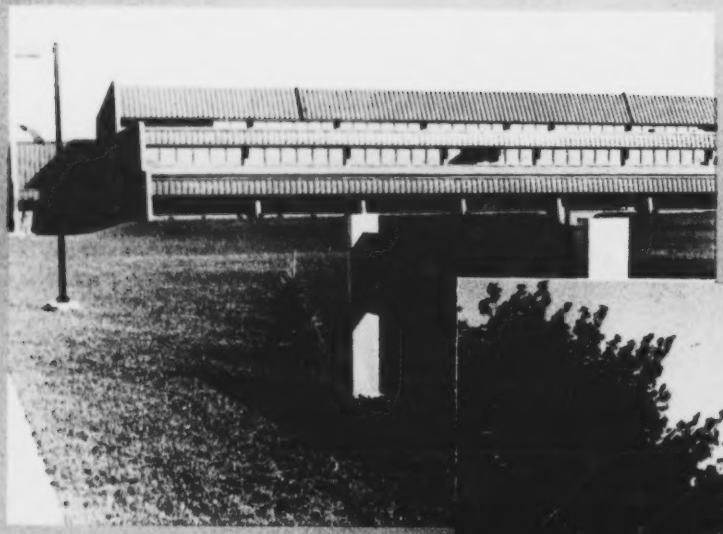
tion. While the school's efficiency of registration and operation is impressive and while the competency-based, multiple entry/exit programs are unique, even more remarkable is the design of customized instruction for use in internal and outreach programs. Most important is the willingness of faculty and staff to depart from traditional practices to design a school which uses business and industry practices. The instructors participate actively in the Quality First movement at the college.

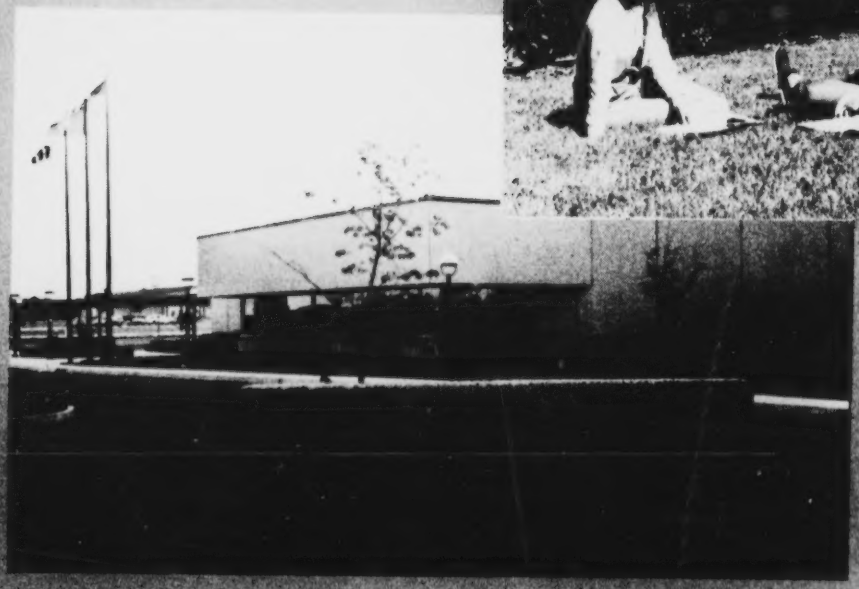
While some of the concepts of the quality process advocated by Crosby relate to the instructional process, a special training program was locally designed for educating instructors. Several instructors, selected because of their creativity and teaching excellence, designed the program described in Chapter Nine.

The final chapter outlines special challenges to implementation which appear unique to public education. Suggestions are given to cope with the challenges outlined in the chapter.

This book was written to provide orientation and assistance to those who wish to examine new ways to design, implement, and manage higher education technical programs using the Quality First process. It explains how one institution has successfully used business practices in most aspects of education, including school management and the instructional process. It should not be assumed that these innovations can or should be transferred en masse to other schools. However, other technical colleges may benefit from the experiences outlined in this book and adapt the concepts expressed to their local college setting.

Note: Throughout the book acronyms are used; the phrase is spelled out in full initially with the acronym in parenthesis. To assist the reader, a full reference page of all acronyms is included as Appendix A.





Chapter 1
Adapting Quality First Processes to Education

Chapter Overview

The search for "quality" may be the most important consumer trend of the '80s and '90s in the United States. Terms like "quality control," "product quality," and "process quality" have been around for years in business organizations, where products mean "goods" or "objects." As service organizations, however, schools produce services rather than goods or objects. Therefore, special challenges arise when schools seek to apply business/product-oriented quality processes to their service-oriented organizations.

This chapter discusses different types of business-oriented quality processes, as well as service-oriented quality and its unique characteristics, "Service Quality Determinants," and several current theories of quality. Finally, it describes the start of the Quality First process at Fox Valley Technical College.

Chapter Concepts

1. Quality: Definitions in Business and Industry
2. Determinants of Service Quality
3. Quality Theories and Theorists
4. FVTC Quality First Process--The Beginning
5. FVTC Strategic Plan
6. FVTC Planning Model

While American businesses are increasingly involved in the quality revolution sweeping around the world, there are virtually no examples of formal quality processes being used in public higher education in the United States. This chapter provides background information on the Quality First process which is currently being developed and piloted at Fox Valley Technical College (FVTC), Appleton, Wisconsin. The school has been actively involved in the Quality First movement since 1985.

Fox Valley Technical College is a two-year vocational-technical institution of higher learning serving a five-county area in northeast Wisconsin with a population of roughly 45,000 part-time, full-time, and occasional students. Associate degrees, vocational diplomas, and certificates are available in 62 programs of study.

Fox Valley Technical College students earn associate degrees, vocational diplomas, and certificates in 62 programs of study.

Quality: Definitions in Business and Industry

"Quality" can be an elusive concept not easily defined by either the consumer or business. While research has demonstrated the strategic benefits of "quality" in contributing to market share and investment return, there are many who feel that it cannot be accurately defined. The search for "quality" is arguably the most important consumer trend of the late 1980s and 1990s.

The search for "quality" is arguably the most important consumer trend of the late 1980s and 1990s.

"Quality control" programs were first instituted in manufacturing firms and have traditionally focused on product quality (how products leave a factory) and on purchasing quality (how products reach a firm), both final inspection processes. More recently, however, industry has begun concentrating on in-process correction, inspection, and control (statistical process control or SPC) while ignoring final inspection because it is no longer necessary. The focus is on prevention, not correction.

FVTC's Quality First Prevention Model is shown in Table 1.

Product quality, purchasing quality, and SPC concentrate on products. Service quality, on the other hand, can best be described as a measure of how well and how consistently a service is delivered when matched with customer expectations.

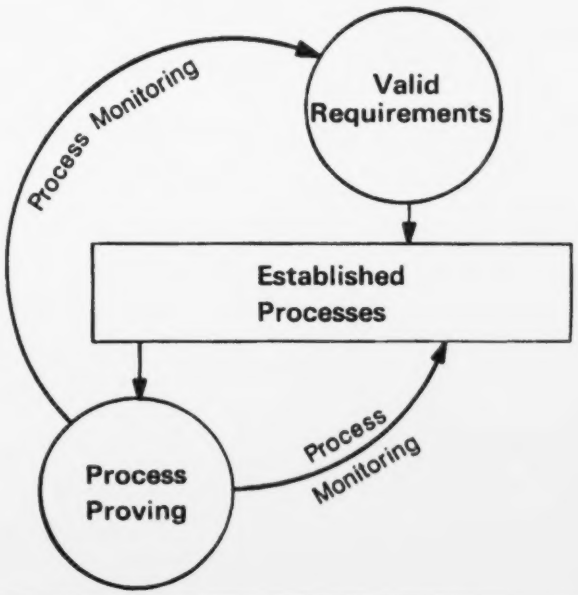
Service quality can best be described as a measure of how well and how consistently a service is delivered when matched with customer expectations.

An analysis of quality processes which have been developed reveals the following characteristics which appear to be unique to service organizations:

1. Service firms have less managerial control over quality in services, especially where consumer participation is intense, because clients or customers affect the process.
2. Service quality is more difficult for customers to evaluate than goods or products quality.

Table 1

FVTC Quality First Prevention Model



3. Service quality perception results when customer expectations are compared to actual performance by the service providers.
4. Quality evaluations involve the "process" of service delivery as well as the outcome of a service.
5. Service quality involves these elements of a service organization:
   - **Physical Climate** - buildings and equipment
   - **Corporate Culture** - organizational image or profile
   - **Delivery of Service** - interaction between the service providers and customers and between customers and other customers.

Regardless of the type of service, customers use the same criteria in evaluating service quality. One method, as outlined in Journal of Marketing, places these criteria into ten categories found in Table 2, "Determinants of Service Quality."

Table 2

Determinants of Service Quality

1. **Reliability** involves consistency of performance and dependability. The firm performs the service right the first time.
2. **Responsiveness** concerns the willingness and readiness of employees to provide service.
3. **Competence** means possession of the required skills and knowledge to perform the service. It involves the knowledge and skill of the personnel and the research capability of the organization.
4. **Access** involves approachability and ease of contact. It means providing efficient services in an accessible way.
5. **Courtesy** involves politeness, respect, consideration, and friendliness of contact personnel (including receptionists and telephone operators).
6. **Communication** means keeping customers informed, using language they can understand, and then listening to them. The company may have to adjust its language for different consumers--increasing the level of sophistication with a well-educated customer and speaking simply and plainly with a novice.
7. **Credibility** involves trustworthiness, believability, and honesty. It involves having the customer's best interests at heart. Contributing to an institution's credibility are factors such as reputation and the personal characteristics of the contact employees.
8. **Security** is the freedom from danger, risk, or doubt. It involves such things as the physical safety of customers and the financial security of the institution.
9. **Understanding/knowing the customer** involves making the effort to understand the customer's needs. It involves learning the customers' specific requirements and providing individualized attention.
10. **Tangibles** include the physical evidence of the service. These are:
    - Physical facilities--neat, clean, comfortable
    - Appearance of personnel--proper grooming
    - Tools or equipment used to provide the service--up to date, modern
    - Other customers in the service facility--who are they?

Source: Parasuraman, Zeithaml, and Berry, Journal of Marketing, Fall 1985.

The difference between exemplary firms and others relates directly to leadership.

Tom Peters

According to Tom Peters, who analyzed exemplary firms in his book, In Search of Excellence, the difference between exemplary firms and others relates directly to leadership. In addition to this overall commitment to people, the experts have identified these common "quality musts":

1. Customer-first orientation
2. Clearly defined organizational mission and standards
3. Supportive and innovative organizational climate
4. Simple, lean management staff
5. Service posture of management toward employees
6. Manager-as-developer of people
7. Management remains close to the action
8. "Intelligent use of human intelligence," is the basis of effective management
9. Teamwork: the main ingredient in a successful organizational structure
10. Traditional hierarchal structure replaced by "networks"
11. Empowerment given to the people
12. Key elements to the organization's viability--education and training
13. Eighty percent of defects are management controllable
14. Statistical methods used to solve problems
15. Quality improvement never ends
16. Quality improvement is everyone's responsibility

Quality Theories and Theorists

Quality "experts" have been advocating for years that "quality" is a cost-effective and necessary business strategy if an organization is to survive the new age of international economics. The one predominant concept that the "experts" emphasize is the **commitment to people**--how people, both inside and outside the organization, are treated. How people-oriented the environment is determines a company's ability to improve quality and productivity to remain competitive.

Four of the most popular and highly respected quality theorists are W. Edwards Deming, Joseph M. Juran, Philip B. Crosby, and Tom Peters. Their theories provide the basis for the majority of quality and productivity plans which have been designed in business and industry.

Dr. Deming is best known for his work with Japanese manufacturers. He feels that good quality does not necessarily mean high quality, but rather a predictable degree of uniform production or service, at reduced cost, based on the market demands. He says "quality" is whatever the customer needs and wants. His basic philosophy insists that productivity improves as variability decreases; and, since there are variances in everything, statistical calculations of quality control are needed.

Deming claims that management is responsible for 94 percent of quality problems. He feels it is the role of management to remove barriers which stop workers from doing a good job. He is a strong advocate of worker participation in decision making. He recommends eliminating final inspection and insists that judging quality requires knowledge of the statistical evidence about it.

Management is responsible for 94 percent of quality problems.

W. Edwards Deming

Joseph Juran, author of Quality Planning and Analysis, was the first of the theorists to deal with the broad management role in various aspects of quality. He summarized the problems of management as human element errors in organization, communication, and coordination.

Juran says that less than 20 percent of quality problems are due to workers; the bulk of the problems are caused by management. He strongly urges management training in quality concepts for all supervisory staff and favors the use of quality circles, which, he believes, improve communication between

The problems of management are related to human element errors in organization, communication, and coordination.

Joseph Juran

managers and the other workers. More than any other theorist, Juran advises the use of Quality Control Specialists in an organization.

Philip B. Crosby, Sr., is chairman and chief executive officer of Philip Crosby Associates, Inc., a consulting firm and Quality College Network which is headquartered in Winter Park, Florida. For fourteen years he was Vice-President and Director of Quality at International Telephone and Telegraph Corporation. He worked his way up from line inspector. Crosby is best known for creating the concept of "Zero Defects" and is an outspoken member of a growing cadre of executives who blame American business problems on poor management, not poor workers.

Quality is conformance to requirements.

Philip B. Crosby

Crosby's theory holds that quality is conformance to requirements which are jointly written by workers and their managers based on the needs of the customers. Quality can be measured, he feels, only by determining the cost of nonconformance. He advocates a "prevention" process rather than "final inspection." To prevent nonconformance, Crosby asks managers to use the three elements of "determination, education, and implementation," while employing his 14-step formula for quality. He cautions managers to take quality responsibility seriously and to be as concerned about quality as they are about marketing and profit making. He feels that a commitment by management to quality processes will result in a 40 percent reduction in errors in just a short time.

His 14-step process focuses on management performance standards rather than on employee motivation for quality success, and his performance standard is "Zero Defects."

Tom Peters is best known as one of the authors of two best-selling books, In Search of Excellence and A Passion for Excellence. His works best express his

philosophy--managers at all levels can join in a "back to the basics" revolution. He stresses that the key areas of competence for managers are superior service to customers, constant innovation, a commitment to people and quality, and leadership. He says that the characteristics which distinguish exemplary companies from others are based on the knowledge that service and innovation are built on principles of listening, trust, and respect for the creative potential of each employee.

Exemplary companies . . . are built on listening, trust, and respect for the creative potential of each employee.

Tom Peters

He also believes that leadership means passion, obsession, and paying attention to detail. It means coaching, effectively "wandering around," and using symbols throughout the organization. "The leader," according to Peters, is the "cheerleader, enthusiast, nurturer of champions, hero-finder, wanderer, dramatist, builder."

Peters also believes that excellence is derived from "thinking big and starting small." It revolves around personal commitment which is never finished.

A listing of recommended books on quality and productivity is found in Appendix B.

The FVTC Quality First Process -- The Beginning

Fox Valley Technical College became involved in "quality" in 1985 when the president of a local paper-making industry suggested that the school offer training programs in quality and productivity for area businesses.

"Quality and productivity" in business is most often associated with products produced and delivered to customers (product quality and purchasing quality). FVTC is not a business; it is an educational institution, a service organization.

How, then, does the concept of "quality and productivity" apply to the school setting? Schools provide services as their "products" and most services in education are intangible, based largely on performances rather than objects. As a result, precise measurements of product specifications against a criterion can rarely be made. These services cannot be counted, measured, inventoried, tested, or verified before the sale or performance of a task provided as a service. Yet, the emphasis in a school setting must be on quality--service quality rather than product or purchasing quality.

Realizing this, the school did comprehensive research to analyze the various quality processes and theories through examination of current literature and visits to local industries which had implemented quality movements.

After almost a year of study, FVTC took action to establish a model "Quality First" process within its own organization before offering a formal program of instruction in "quality" to business clients. In August 1985, the Board of Education adopted a five-year plan, and the process began shortly afterward.

The rationale for the school becoming involved was based on these premises:

If the customers are satisfied, enrollments will increase, attrition rates will fall, graduate placement rates will improve.

1. If the school is to offer instruction to business and industry in quality processes, it must first demonstrate, by example, that it is striving to become a model of quality itself in both service and instruction. The practical experiences encountered will be very useful during the planning and implementation of outside training.
2. By instituting quality processes, the school can increase its own effectiveness by serving its customers more efficiently. If the customers are satisfied, enrollments will increase, attrition rates will fall, graduate placement rates will improve.
3. Since quality processes strive to improve management practices, the implementation of a quality environment fosters increased employee satisfaction and productivity.

While the Philip B. Crosby Process for Quality was selected as the basis for instituting FVTC's productivity process, the best features of approaches by other quality theorists were included.

Formal implementation began in November 1985. Designed to be a perpetual process, not a program with a definite starting and ending time, the initial "FVTC Quality First Plan" included some goals which were established to serve as long-range targets for the school (Appendix C). In addition, the FVTC Strategic Plan included some assumptions and critical directions related to quality (Table 3).

Table 3

FVTC Strategic Plan (Excerpts on Quality)

(Assumptions)

Need for Quality Environment:

Students have a right to a quality instructional program with reasonable assurance of obtaining a job when they meet the requirements for graduation in structured programs.

Students have a right to receive excellent service in all FVTC departments.

It is essential that all FVTC products and publications reflect a quality image.

FVTC employees have a right to be treated with dignity and respect and to participate in decision-making and budget-planning activities.

(Strategic Direction)

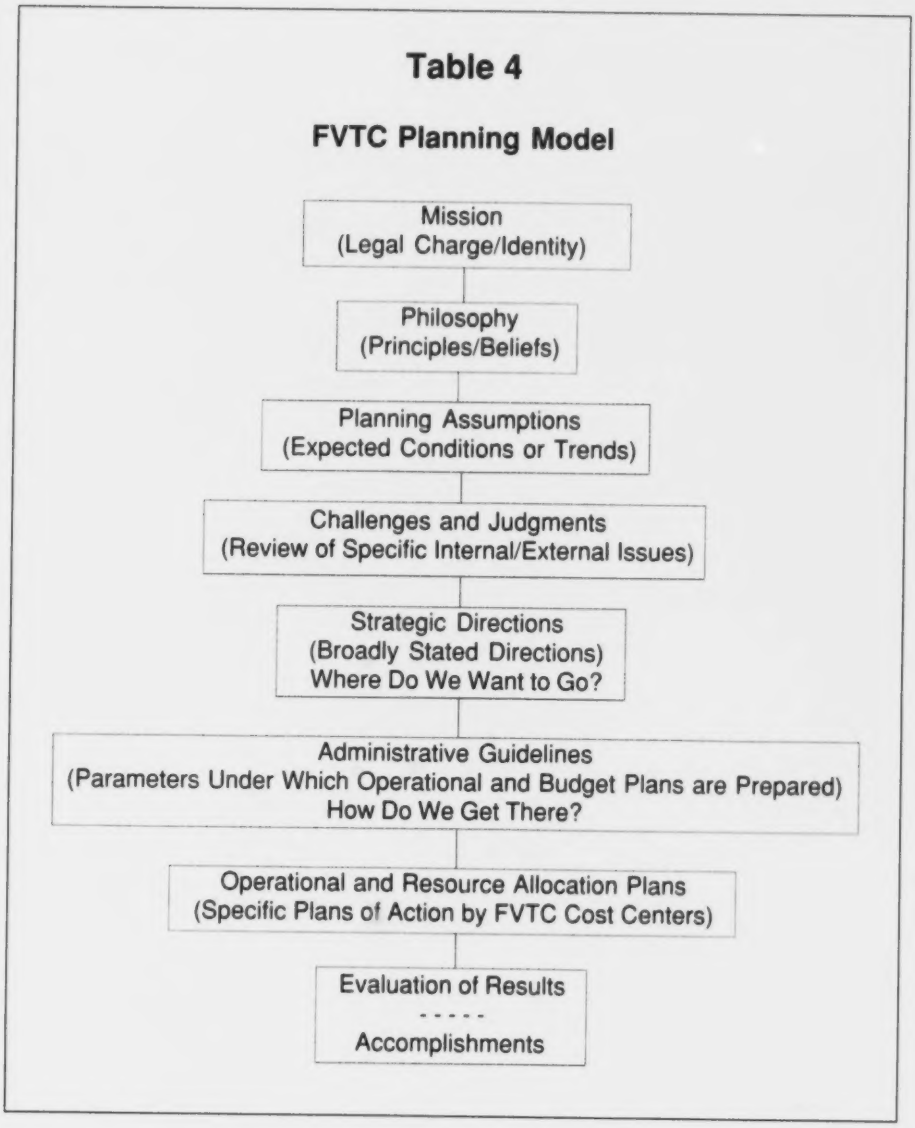
FVTC will implement a "Quality First" process to:

- Define and maintain a quality environment throughout the school
- Have students who are satisfied with the quality of their instruction
- Have graduates who are assured of job placement upon successfully completing graduation requirements

Combined, these long-range goals and directions became targets for the emerging overall plan of Quality First at Fox Valley Technical College. They are written as guidelines for the future, with the understanding that they will be refined later with greater involvement of employees. The FVTC Planning Model is shown in Table 4.

Table 4

FVTC Planning Model



QUALITY
UPDATE

Chapter 2
Implementing Quality First Processes in Education

Chapter Overview

All service organizations, whether private sector or public, need to be concerned about improving operations, reducing costs, and maintaining quality in output. Implementation of a quality process is one good method of addressing these concerns.

This chapter details elements of the Crosby quality model and outlines FVTC's implementation of the 14-step process.

Chapter Concepts

1. The Crosby Model: Four Pillars
2. The Crosby Model: False Assumptions
3. The Crosby Model: Absolutes of Quality Management
4. FVTC's Implementation Plan
5. Steps 1 Through 14 at FVTC

"Quality is Free. It's not a gift, but it is free. What costs money are the unquality things--all the actions that involve not doing jobs right the first time."

Philip B. Crosby

Every time a service organization performs for a customer, that customer assesses the quality of service. Common assessments by many customers directly form an organization's image in terms of service quality.

Effective management of service makes sense in any industry that deals with an intangible product.

Airlines, banks, hotels, restaurants, hospitals, public utilities, government service agencies, and educational institutions are service oriented. These organizations are concerned about improving operations, reducing costs, and maintaining quality in the production of the product--an intangible service. In an educational institution, that intangible is service to the student. Effective management of service makes sense in any industry that deals with an intangible product.

Formal quality processes have been started in all of these service organizations--except educational institutions.

The concept of quality must include looking at the human factor of interaction.

There are reasons that schools seem to be lagging behind. Regardless of the setting, the concept of quality must include looking at the human factor of interaction. In higher education, that human factor means services to students who attend classes and either withdraw early or ultimately graduate. Students can be considered "products" of the service organization called "school"; they are consumers of services provided by registration clerks, cashiers, custodians, counselors, bookstore clerks, secretaries, receptionists, coordinators, department heads, deans, and most of all, teachers. Obviously, as in business, it is easy to institute quality processes in the service departments of the school. However, it gets more complicated when one tries to implement quality concepts in the classroom.

To begin with, students come from various backgrounds--prior schooling, friends and family influences, television exposure, and work experiences, just to men-

tion a few. They come to the college with a variety of intellectual capabilities and with various aptitudes largely based on prior educational experiences. These student differences create a special challenge when establishing quality criteria in education.

Differences in students create a special challenge when establishing quality criteria in education.

I am convinced that adapting quality criteria to education is not impossible and may, in fact, be easier than previously thought. The key is to adopt the same techniques of quality control which are successful in the private sector.

The Crosby Model

The Philip B. Crosby 14-step model for quality improvement was selected for implementing quality processes into service departments and instruction at Fox Valley Technical College.

His model seemed to be most appropriate for education since throughout the world Crosby operates quality colleges which employ his quality concepts. When FVTC staff attended Crosby's College workshops, the belief that quality process controls are, indeed, possible in an educational setting was reinforced.

Four Pillars

According to Crosby's model, there are four pillars which support the quality process in any organization. Each of these pillars, shown below, complement each other:

Management Participation and Attitude - Crosby suggests that management has to be very active when it comes to quality. Traditional attitudes that quality means goodness; that it is unmeasurable; that errors are inevitable; and that people just don't care about doing good work must be changed at the management level and ultimately filter down to other employees.

Quality must be seen in a different light . . . it is up to management to lead the way in changing attitudes about it.

Philip B. Crosby

Quality must be seen in a different light, according to Crosby, and it is up to management to lead the way in changing attitudes about it.

Professional Quality Management - Crosby suggests that quality councils be established throughout the organization. Such councils may be set up by product line, service department, or other identifiable aspect of the organization.

Employee Participation - The total quality effort cannot be successful without the dedication, hard work, and contribution of each employee. Most importantly, all persons must have opportunities to share their beliefs and their suggestions to make the program work. Without their acceptance of the concept, it will surely fail. Key to this participation is a comprehensive training program about quality concepts.

Recognition - This step is vital to reinforce employee efforts and achievements as the program progresses. Recognition should be planned and given for accomplishment at different levels throughout the organization. Additionally, outstanding contributions made by individuals should be recognized on an organization-wide basis.

False Assumptions

Obviously, before a quality process is initiated, erroneous assumptions about quality must be dispelled. In his book, Quality Is Free, Crosby outlines these false assumptions:

1. **That quality means goodness or luxury.**

   Crosby dispels this by defining quality as measuring conformance to requirements. He feels that requirements must be clearly stated so that they cannot be misunderstood. Quality problems become nonconformance problems and quality can, therefore, be defined.

2. **That quality is an intangible and, therefore, not a measurable item.**

   Under Crosby's program, quality is precisely measured by one of the oldest and most respected of all measurements--money. That is, Crosby insists quality be measured by using cost factors which are the "expense involved in doing things wrong."

3. **That there is an "economics" of quality.**

   Managers often offer excuses such as "our business is different," for not instituting quality processes. Crosby responds by defining quality as conformance to requirements and challenging managers to "get deep into process certification and product qualification."

4. **That all the problems related to quality in an organization are originated by the workers, particularly those in the service or production areas.**

   Crosby points out that in reality, the employees in these areas work as well as they ever did and are even more productive than they have been in the past. People in production and service areas make important contributions to solving the problems in the organization.

Workers make important contributions to solving problems.

Absolutes of Quality Management

Crosby bases his model on these four Absolutes of Quality Management:

1. Conformance to standards which are defined
2. Focus on prevention, not appraisal or inspection
3. Zero defects as the performance standard
4. Cost is actual price of nonconformance

Fox Valley Technical College's Implementation Plan

With these pillars, false assumptions, and absolutes of quality management in mind, the staff began implementation of the Quality First process at Fox Valley Technical College. The ultimate goal is zero defects in every arena in the organization, including all service departments, classrooms, and laboratories.

The implementation schedule (Table 5) and implementation time line (Appendix D) show that the first two years in the process focus on implementing a massive training program for all employees.

Table 5

Fox Valley Technical College Implementation Schedule

Phase I - August 1985 to December 1986

- Board, Executive Orientation and Training (Quality College)
- Management Orientation and Training (QES)
- ESPA Orientation and Training (QAE)

Phase II - January 1987 to December 1987

- Complete Training for Management and ESPA
- Design and Implement Quality First Instructor Training (QIE)
- Design and Implement Quality Awareness Orientation (QAO)
- Implement 14-Step Process
- Implement Quality First Process with Management and ESPA

Phase III - January 1988 to December 1988

- Complete Training for Instructors (QIE)
- Implement Quality First Process with Instructional Staff
- Evaluate Progress, Start Over Again

Note: Acronyms used above are referenced in the text that follows.

Crosby's 14 Steps to Quality Improvement (Table 6) have been adapted to form the basis of FVTC's implementation process; but, as Crosby notes, the activities described under each step do not necessarily occur in a step-by-step sequence. Rather, the steps often occur simultaneously. Throughout the process, the activities and plans for implementation continue to be refined.

Table 6

Crosby's 14 Steps to Quality Improvement

1. Make it clear that management is committed to quality.
2. Form quality improvement teams with representatives from each department.
3. Establish measurement criteria for quality in the organization.
4. Evaluate the cost of quality and explain its use as a management tool.
5. Raise the quality awareness and personal concern of all employees.
6. Take actions to correct problems identified through previous steps.
7. Establish a committee for the "zero defects" program.
8. Train employees to actively carry out their part of the quality improvement program.
9. Hold a "zero defects day" to let all employees realize that there has been a change.
10. Establish and meet goals and tasks as a team.
11. Institute error-cause removal procedures.
12. Recognize and appreciate those who participate.
13. Establish quality councils to communicate on a regular basis.
14. Do it all over again to emphasize that the quality improvement program never ends.

Step 1 - Commitment from the Top

Top level commitment to the Quality First process is necessary to show all employees that the FVTC District Board and top administration solidly support the concept of Quality First. This commitment includes allocation of adequate funds to support the effort; training for the Board, administration, and top management; establishment of a Quality First policy; and appointment of a quality coordinator.

Commitment must continue throughout the quality movement . . . lack of management attention is the major reason quality planning and implementation fail in some organizations.

Top executives of the organization demonstrate their commitment by developing and communicating a Quality First policy. All levels of management receive training in the process, which includes the need for the process and their individual roles to support it. However, this commitment must continue throughout the quality movement, because lack of management attention is the major reason quality planning and implementation fail in some organizations.

Fox Valley Technical College began the Quality First process when the District Director made a presentation to the Fox Valley Vocational, Technical and Adult Education (VTAE) District Board in August 1985. At that time long-range goals and objectives were presented and a tentative three-year budget was approved. This formally started the Quality First process at FVTC.

FVTC administrators and board members received a comprehensive primer in quality concepts at the Crosby Executive College

The District Director and the Chairman of the Board Personnel Committee attended the Crosby Executive College in November 1985. Within a few months, the administrative cabinet attended the Crosby Quality

Management College. Then shortly after, the Quality Coordinator was appointed, the Quality Improvement Team (QIT) was formed, and the Quality First policy was written. This districtwide policy, which was adopted by the Board on September 16, 1986, is found in Table 7.

Table 7

FVTC Policy on Quality First

It is the policy of Fox Valley Technical College to provide quality instruction and service consistent with the highest educational standards. We endeavor to provide precise, prompt, and courteous service and instruction to our students, to one another, and to the employers who hire our graduates and use our services.

Adopted September 16, 1986

Step 2 - Quality Improvement Team

The purpose of the Quality Improvement Team is to plan and carry out the quality improvement process. This group develops the framework for the overall coordination of the quality plan and provides the stability and formal communication needed to ward off any roadblocks to quality improvement.

The first Quality Improvement Team at Fox Valley Technical College consisted of five administrators, the District Director, and the District Quality Coordinator. The District Quality Coordinator served as the chairman of the QIT, set up and conducted the weekly meetings, and assigned the design of the preliminary action plans for the Crosby 14 Steps to the QIT members. Minutes were distributed after each meeting to keep all QIT members informed of the team's activities.

The Quality Coordinator job description is found in Appendix E.

QIT members interpret progress reports of the quality process implementation effort.

To get the process under way, the Quality Improvement Team:

1. Established long-range goals and objectives
2. Adopted a charter for the operation of the QIT
3. Developed key issues and a detailed strategy which contained priorities and a statement of purpose
4. Set a timetable for all quality improvement process activities
5. Established a budget to conduct the employee education program

While numerous quality councils and committees are active, the Quality Improvement Team remains the key planning unit which oversees the total process. The tentative plan is to rotate the membership on the QIT to involve new members who can generate other ideas to improve the process of Quality First.

Step 3 - Quality Measurement System

Crosby implies that the true payback in any quality program relates to cost savings which occur naturally because of improved systems of quality control within the organization. This third step involves the selection and definition of the measurement elements. These are used to communicate openly where nonconformances to measurement standards do exist.

The true payback in any quality program relates to cost savings.

Once measurement elements and standards have been identified, it is necessary to provide the means and methods for displaying the measurement items and to develop a system to communicate the measurements to all employees.

The QIT initially identified and agreed on the general elements. Each team member was asked to identify some general elements and to describe the criteria to be used for measurement. These were then shared with and further refined by the FVTC Administrative Council. This Council includes the Administrative

The Quality Council monitors the implementation of quality processes in FVTC operating divisions.

Cabinet and the top managers of the school--specifically, the Instructional Division heads and managers of support service units, as well as the Affirmative Action Officer and Quality Coordinator. Later, this Administrative Council became the District's first Quality Council. Together, members of the Quality Improvement Team and the other members of the council established these initial major quality elements:

- **Curriculum and Instruction**
- **Human Resources**
- **Marketing**
- **Planning Process**
- **Work Environment**
- **Technology**

These initial elements have been established as the foundation for FVTC's quality process. Each major element contains a definition and measurable conformance requirements.

Refinement . . . a perpetual process

The measurement elements established by the Quality Improvement Team are only the beginning of the further refinement of the system of measurements. As the staff in the various departments of the organization are trained and become more involved in the Quality First process, the measurement elements and criteria will be modified or replaced. As new work processes and advanced technology enter the organization, all employees will have opportunities to assist in refinement so that it becomes a perpetual process of looking at measurement elements and standards to keep the system current.

In addition to the measurement elements, a list of 20 Key Guiding Principles to Quality at FVTC was written to include attitudes, beliefs, and values that guide all the activities of the District (Appendix F).

Step 4 - Quality Costs as a Management Tool

"Quality" is rarely looked at in financial terms the way everything else is. It is typically thought of in some relative fashion, as in degrees of goodness. However, according to Crosby, the best measurement for quality processes is money--the same as for any other management/organization process.

The best measurement for quality processes is money--the same as for any other management/ organization process.

Philip B. Crosby

In the past, the cost of quality has been used only as a means of measuring defects in a manufacturing plant. Seldom has it been used as an evaluation tool. However, Fox Valley Technical College has designed a costing model which may be applied to any post-secondary vocational-technical school. The model was first used to prepare a cost statement for the College, then to prepare unit cost statements for each unit or department of the organization. The procedure is standardized across the organization so that the costs become increasingly more credible as each separate cost center's data is added.

Crosby says, the cost of quality may be divided into two areas--the cost of nonconformance and the cost of conformance. Or, following the model proposed by the American Society for Quality Control (ASQC) Cost Committee, the cost of quality includes the total costs incurred by:

- Investing in the prevention of nonconformances
- Appraising a product or service for conformance to requirements
- Failing to meet requirements

The models are very similar in concept and philosophy for implementation. Fox Valley Technical College used the ASQC three-component model to select the cost elements but decided to use Crosby's two-part model for costing.

Both models suggest that, as with manufacturing companies, a service organization quality process starts with the support and guidance of top management. They both include setting performance standards in each area of the operation, monitoring actual performance, using corrective action as required, and continuing quality improvement. Both state that an ideal quality cost system attempts to measure the difference between the actual cost of running a business and what it would cost if everyone in the organization performed perfectly--100 percent productivity. While it may not be easy to measure everyone's performance, it is certainly practical to strive for perfection, the theorists contend.

It is practical to strive for perfection.

The chief financial officers of the college establish cost elements and determine initial school-wide cost estimates.

Listed below are Fox Valley Technical College's costing units.[1] This quality analysis should be viewed as the institution's first attempt at enhancing its present quality. FVTC's goals relate to the amount of measurable improvement that is found each year and not necessarily to the base numbers that are used.

1 Comparison with other organizations is meaningless and should be avoided.

1.0 Cost of Conformance Elements

The cost of conformance includes expenses necessary to make or do things right the first time. This includes all other costs except the cost of nonconformance. However, for this costing statement, these are costs related to identifying and preventing specific causes of failure to keep the same things from happening again in products or services. All aspects of prevention costs are shown, including costs of quality education and orientation for employees.

1.10 Marketing Research - costs for gathering and evaluating data on customer quality needs and perceptions about their satisfaction with the organization's product or service. Fox Valley Technical College's external customers are students and employers; the internal customers are co-workers in the College. (**Criterion Used = 50 Percent of Research Budget**)

1.20 Quality Orientation and Training - costs for developing and conducting formal training programs to orient employees to quality processes and error prevention. Fox Valley Technical College uses five levels of training: Executive College, Management College, Quality Education System (QES), Quality Awareness Experience (QAE), Quality Awareness Orientation (QAO), and Quality Instructor Education (QIE). (**Criterion Used = All Costs Except Staff Time**)

1.30 Quality First Process Coordination - costs for coordinating the process, such as costs for coordinating the plan, and for supplies and materials used to document the process. Quality planning, such as manual development, quality record control, and costing processes are included. In addition, there are costs for implementing the quality research design. (**Criterion Used = Actual Costs**)

1.40 Quality Monitoring and Auditing - costs for the conduct of instructional and noninstructional audits and other monitoring of processes to determine the level of quality. Also included are costs for financial internal control systems. (**Criterion Used = One Half of Research Department Budget**)

1.50 Institutional Wellness Programs - costs for programs to promote employee wellness. All illness prevention programs are a part of this conformance cost element, including stress management, nutrition, and exercise programs conducted for employees. (**Criterion Used = Estimated Costs of Operation**)

2.0 Costs of Nonconformance

Nonconformance is the cost of doing things wrong.

The cost of nonconformance is the cost of doing things wrong--all the expenses involved to do things over. This includes the costs of rework in service departments. At Fox Valley Technical College, it also includes costs which result when students fail to meet their educational objectives.

FVTC identified key elements of quality (see Step 3) which are the framework of the District's commitment to quality. These elements, together with a set of guiding principles, have been established as conformance requirements for the quality process; they form the criteria for determining the following costs of nonconformance at FVTC:

2.10 Resource Utilization/Enrollments - These costs occur because maximum enrollment is not maintained in each program, resulting in excess instructional stations. These costs can be recovered as the unit moves toward filling the programs. (**Criterion Used = Monthly Utilization Reports from Counselors**)

2.20 Rework in Service Departments - Costs are incurred by rework which requires correction or replacement of incorrect, incomplete, or defective products or services. In short, these costs are the result of not doing things right the first time. (**Criterion Used = 20 Percent of All Service Department Budgets**)

2.30 Retention of Students - These are student attrition costs. While the loss of students creates utilization costs (2.10), these are additional costs because of the loss of state aids and tuition. (**Criterion Used = Loss of 530 Full-Time**

Equivalent Students (FTE's) (1126 Dropouts) X State Aids/Tuition Loss)

2.40 **Employee Attendance** - Costs occur because of employee absence. Included in the costs are salaries for overtime and substitutes needed to replace the absent worker. (**Criterion Used = Loss of Time which is above national average--1.8 percent of total time available to work**)

2.50 **Scheduling of Human Resources** - Costs are incurred because of inequitable scheduling of employees. When persons are not scheduled according to workload and performance standards, or are reassigned to a project, nonconformance occurs and excess costs result. (**Criterion Used = 5 Percent of Labor Costs**)

2.60 **Customer Service** - Costs are incurred to investigate, resolve, and respond to individual customer complaints or inquiries. Included are costs for local, state, and federal investigations of alleged affirmative action violations. (**Criterion Used = Actual time spent handling complaints - initially estimated at one full-time equivalent employee**)

Step 5 - Quality First Awareness

Quality is everyone's responsibility.

Proponents of formal quality processes contend that it is important for employees to realize that quality is everyone's responsibility. A planned program of awareness must be initiated in the organization. This step involves formal commitment by the organization, as well as all the other activities which result in the implementation of the steps suggested by the Crosby model.

Because the whole idea of quality awareness should be a natural part of the organization's communications plan, existing internal channels should be used to promote quality awareness. The word "quality" needs to infiltrate the organization and people need to be reminded of it as much as possible so it becomes the culture of the organization. People need to know the District's Quality Policy, and they especially need to see that the management, from the District Director on

down, is committed to it. They need to be aware of what it costs when things are done wrong in their department.

Fox Valley Technical College's awareness program began during an Executive Council for Economic Development meeting when Frank Koffend, President of Akrosil Corporation, suggested that FVTC begin to explore quality education to provide training for local business and industry. FVTC decided that if the school district were to provide training programs in quality and productivity, it should carry out quality processes within its own operation, management, and instructional programs.

When designing FVTC's quality process, the college turned to the private sector for assistance. Leaders from local businesses assisted the college in establishing and implementing the process.

Following visitations to other area companies who had instituted quality programs, Jim Parker, a proponent of quality from Kimberly-Clark Corporation (K-C), addressed the management staff in June 1985. His discussion of the concepts being used in the K-C Research and Development Division sparked interest.

Simultaneously, a state project on quality education was approved, with Fox Valley Technical College as fiscal agent and coordinator. At this point, a curriculum for training in quality processes was prepared to serve as an orientation course for business and industry.

The Quality First! curriculum, developed at FVTC with the help of other Wisconsin technical schools, has been used to launch a statewide effort in quality training.

Later in 1985, representatives of 3M Corporation spoke to FVTC management staff about the quality processes being used by their corporation. 3M began its quality program with several top managers attending the Crosby Quality College and later developed its own training program for use within the corporation. The company assisted FVTC by sharing its success with the District staff. 3M's contribution to the FVTC Quality Awareness program was substantial.

The Quality Awareness Process at FVTC received another boost when Tom Peters, well-known author of In Search of Excellence and A Passion for Excellence, was the keynote speaker at a conference hosted by the school in June 1986. Over 100 FVTC employees, in-

cluding administrators, managers, and instructors, joined over 1,300 members of the business community to hear Peters discuss his ideas about quality in organizations.

In August 1986, the entire FVTC staff heard the first formal presentation given by the District Director as an orientation to the Quality First process.

Other awareness activities being carried out at FVTC include the following:

- Design and use of a Quality First logo
- Circulation of awareness surveys among the employees
- Development of a Quality First Annual Report
- Having "Quality First" as an agenda item at every regular management and administrative meeting
- Including Quality First articles in every District newsletter
- Preparation and use of a computerized media presentation on quality concepts

Step 6 - Corrective Action

Once causes are identified, problems can usually be eliminated.

The corrective action system identifies and analyzes problems which hinder quality in the organization and takes the necessary action to correct them. The purpose of this step is to identify and eliminate problems forever by replacing nonconformances to quality standards with conformances. Corrective action systems are based on data which shows what the problems are, together with an analysis of the causes of the problems. Once the causes are identified, the problems can usually be eliminated.

Fox Valley Technical College's first step in meeting the objectives of this corrective action process was to provide a vehicle which would allow all employees in the school to communicate problems to upper management. A committee was established to set up a

system which could be used across the organization. Two ideas currently being considered are:

- Use of defects reporting form
- Design and use of a computer-based reporting system allowing employees to notify the Quality Coordinator of problem areas

Steps 7 and 9 - Planning and Holding a "Zero Defects" Commitment Event

Crosby suggests that an employee commitment event be held approximately a year after the formal quality process starts. An ad hoc committee was formed to plan for the November 1987 FVTC "Pride and Prevention Day." This event will be a significant part of the 20th anniversary of the District formation and the 75th anniversary of vocational-technical education in Wisconsin.

In planning for this formal event, the committee identified and considered activities from several sources, including Crosby's suggestions. Participants in the celebration include Board members, administration, management, faculty, and support staff, as well as the public.

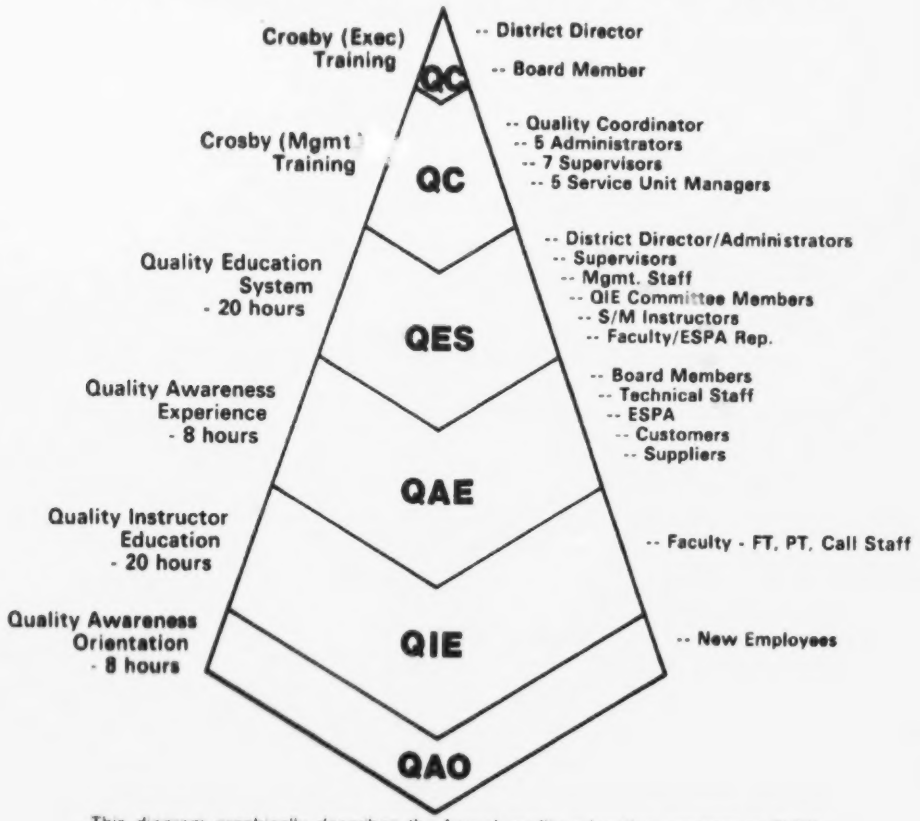
While this first quality day will herald the District's movement toward excellence, the formal quality commitment (Zero Defects Day) is scheduled for May 1988.

Step 8 - Quality First Education

To ensure constant quality awareness, and a hassle-free environment, the organization must provide ongoing education to instill a common language of quality and to promote understanding of each individual's role in keeping the concept moving.

The quality training program gives all employees the necessary concepts and techniques to eliminate non-conformance problems, and in particular, targets the Absolutes of Quality Management to every employee.

FVTC Quality Improvement Education Plan–Phase I



This diagram graphically describes the formal quality education program at FVTC.

The overall 14-step educational plan proposed by Crosby need not be followed sequentially. While it starts at the top, it relates to everyone. It requires executive education, management education, and awareness education for all other employees in the organization, including new employees. It also requires that everyone in the organization understand that quality is everyone's responsibility.

The Quality College educational program is the core of FVTC's training plan.

Phase One: In November 1985, the District Director and the Chairman of the Board Personnel Committee attended the Executive Education Workshop at Quality College. The purpose of that workshop was to help top-level executives understand their role in improving quality. The workshop also provided information on what everyone else should be taught in the next training program which revolved around the Absolutes of Quality Management, the strategy of quality improvement, the 14-step process, the education system, and other concepts to insure basic understanding of the quality process.

Phase Two: The five top administrators and the Quality Coordinator attended the Quality Management College. Building on the executive education program, management college covered the 14-step process in greater detail and required each person to relate the process to actual situations in the organization. Upon returning to Fox Valley Technical College, this group was appointed as the first Quality Improvement Team (QIT) for the District. One of their first actions was to recommend that the division supervisors also attend the Management College. This was accomplished during the summer of 1986. Later, other key members of the management staff attended the same workshop.

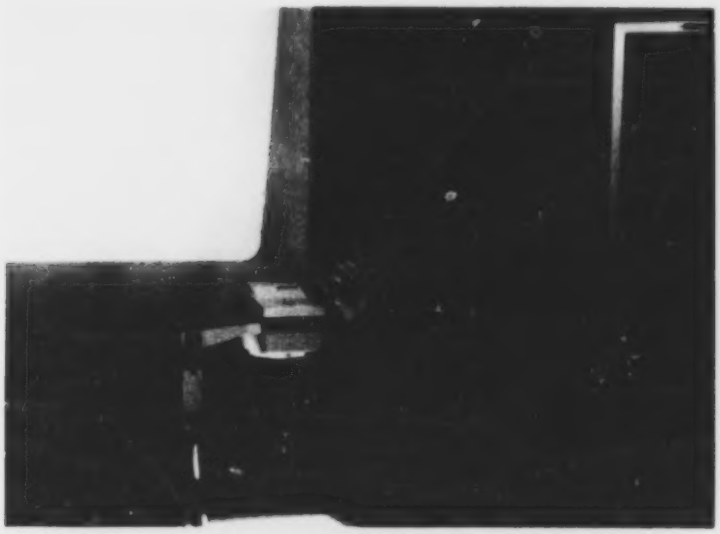
Internal Training Programs

QES (Quality Education System)

Crosby summarizes QES training using what he calls the six "C's": comprehension, commitment, competence, communications, correction, and continuance concepts taught to help participants develop a common management philosophy. The overall purpose of the sessions is to help each participant understand ex-

Six "C's":
Comprehension
Commitment
Competence
Communications
Correction
Continuance concepts

actly what changes cause quality improvement in the organization. The program advocates changes toward management styles which promote nonconformance prevention and error-free attitudes among employees.



All members of the management staff completed a 20-hour course to prepare them for their roles in the FVTC quality process.

FVTC's District Director, administrators, supervisors, and all management staff were required to participate in the QES training. QES is structured as a six-week, 20-hour course using instructional materials from Crosby Associates. Instruction began in September 1986. Instructors from the Supervisory Management (S/M) Department and union representatives from the Faculty Association and the Educational Support Personnel Association (ESPA) were also invited to participate.

QAE (Quality Awareness Experience)

QAE is an eight-hour training program for all technical staff, educational support staff, and other persons involved with the organization on a supplier basis. Faculty members also receive this eight-hour component in

their training program. The purpose of the Quality Awareness Experience is to teach all employees the basic concepts of Quality First, and the goal is to promote understanding and awareness of their role(s) in this process.

QIE (Quality Instructor Education)

The most unique portion of the education program is the faculty training. Curriculum components for the special workshop titled "Quality Instructor Education" (QIE) were developed using the advice and assistance of faculty members in the District.[2]

Training recommended by the recognized experts on quality is included in the FVTC ongoing training program for continuing education in quality concepts which has been designed internally. This training program introduces employees to new and continuing concepts of quality and productivity including:

- Team building
- Problem solving
- Customer-first orientation
- Statistical process control

QAO (Quality Awareness Orientation)

A specialized orientation program for all new employees of the District, Quality Awareness Orientation, includes many of the Crosby concepts as well as those being promoted by others who have written and developed materials on quality. This locally produced training program includes information about those processes which have been successful in the private sector.

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2 Chapter Nine describes this training in detail.

Step 10 - Goal Setting

People begin to think about the goals of the organization.

In most cases, the first six steps in the Crosby process are completed by management. However, when the measurement process starts, people immediately begin to think about the goals of the organization. Goal setting happens almost automatically in the Crosby process. Crosby's ultimate target is "zero defects"[3] in all services and operations of the organization.

At Fox Valley Technical College, long-range goals for the Quality First plan were written as a part of the initial presentation to the District's Board of Directors. They were designed with the understanding that they would be modified as the Quality First process evolved throughout the organization.

The goals, outlined in Appendix C, include lofty targets which are directed specifically toward instructional programming and school management. Instructional targets of "zero defects" include job placement for all graduates who complete FVTC programs and eliminating all dropouts from programs. A goal has been established to design pay-back guarantees for individuals who are not satisfied with a course or program in the school.

Do it right the first time.

In the service departments, a goal of zero errors has been established. This means that the target for each support department is to eliminate all errors and to implement a "do it right the first time" attitude throughout the organization.

3 See Appendix G for Crosby's definition of "Zero Defects."

Step 11 - Error-Cause Removal

An important part of the quality process is to remove the causes of errors in the organization. During this process, employees are asked to state the problems they experience, along with suggestions or recommendations to help solve the problem. They don't necessarily have to come up with "the answer," but in this problem-solving atmosphere, chances of cleaning up problems and producing an error-free (or zero defects) environment increase dramatically. This step is closely related to Step 6, "Corrective Action," in which the problems are identified.

It is important to remove the causes of errors in the organization.

Error-cause removal teams are established to help recommend solutions for the problems which have been identified. The error-cause removal teams respond quickly to each problem as it is identified and recommend solutions.

An ad hoc committee is set up to assist in corrective action implementation. Each time a problem is identified, it is assigned to the committee, which then develops a recommended solution. Special training assists the managers/supervisors in the error-cause removal system. Those problems which cannot be solved at lower levels are referred to the QIT for action.

Step 12 - Recognition

Employee recognition is vital to any Quality First program. Recognition programs are generally unique to the organization and are established based on recommendations, usually from the Quality Improvement Team or one of the Quality Councils in the organization.

Many organizations fail to recognize their good performers; unfortunately, some managers feel that employees are being paid to do their jobs, and that in itself is reward enough. This kind of attitude, however, reflects an insensitivity to individuals and an immature attitude toward the development and the creation of outstanding employees.

Recognition of individual efforts and achievements is vital to the quality process.

Fox Valley Technical College is reviewing all current recognition activities and developing a formal, comprehensive recognition plan to include recognition events at all levels. Frequent informal recognition events as well as formal programs for individuals, groups, and vendors are planned.

Step 13 - Quality Councils

The goal is to establish communications within the organization.

Quality councils, wings of the QIT, bring appropriate people together regularly to share quality management information. The goal is to establish communications within the organization and to help the quality improvement process.

It is essential that representatives from each department serve on quality councils. Guidelines are developed and regular meetings are held. The groups provide assistance and make recommendations for corrective action to the overall quality improvement process. Minutes are kept and distributed across the organization so employees recognize that these councils serve as a forum for feelings, experiences, and problems related to quality improvement. All actions are documented and serve as evidence that the councils are, in fact, alive.

Fox Valley Technical College used two existing committees as the first quality councils for the District. The first is called the District Quality Council (QC). It is made up of all the members of the Administrative Council, representing all major divisions and departments of the school. The District Quality Council assumes a leadership role in implementing the 14-step process in the organization. Each member is responsible for the implementation of his or her own unit plan of Quality First. Each member gives a monthly progress report on implementation of the 14-step process to the management staff as well as QC.

The other quality council at FVTC was formerly known as the Staff Advisory Council and consists of members from each unit of the school. All levels of employees are represented. This Quality Advisory Council (QAC) meets monthly during the regular school year. At each meeting, Quality First is an agenda item, and the District administrators of the quality process provide a monthly progress report.

Step 14 - Do It All Over Again

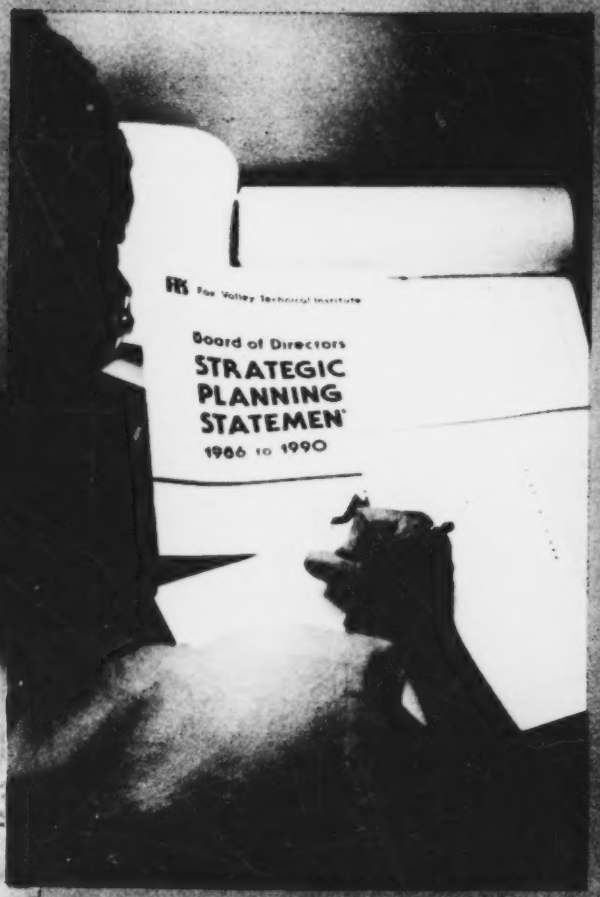
To emphasize that the quality improvement process never ends, procedures must be established to insure that the quality process is perpetual. This step reminds

The quality improvement process never ends.

all employees that the process is continuous and makes permanent the management responsibility to quality. The plan calls for repeating the sequential actions of the 14 Quality First action steps and maintaining and passing on to the various new teams as they are established.

At Fox Valley Technical College, the Quality Improvement Team has established a specific plan for repeating the Quality First process. Formal, written records of the Quality Improvement Team and the quality councils' actions are maintained. A plan is established to rotate Quality Improvement Team members, as well as those on the quality councils and the committees, to generate new ideas and more fully educate all members in the 14-step process. The plan allows for at least one member of each group to "stay behind" to ensure continuity.

During the rotation, the team reviews the accomplishments and determines whether Quality First goals and objectives to plan, implement, and monitor the results are being met in order to insure that a continuous process occurs.


Fox Valley Technical Institute
Board of Directors
STRATEGIC
PLANNING
STATEMEN
1986 to 1990

Chapter 3
Effective Strategic Planning

Chapter Overview

The overall planning process should be a primary function of any school district. At FVTC, operational planning or short-range planning covers a period of several months to one to two years and is implemented to improve routine conditions in the District. Strategic or long-range planning has a longer time phase and at FVTC covers a five-year period. Because strategic planning deals with more uncertain variables about the future of the District, it requires more in-depth study of planning variables and new opportunities. Strategic planning calls for subjectivity in analyzing trends and opportunities, as well as creativity in determining the use of resources.

Planning takes time. Planning is a process that takes from three to five years to be fully implemented. During this period, old ways must give way to new ideas, techniques, and methods. Keep in mind that the importance of the planning process is that it encourages everyone to think creatively and project the future. It allows staff members to air their views. The most important part of planning is the process and dialogue; the actual production of the plan is secondary in importance.

Chapter Concepts

1. The Process and the Plan
2. Strategic Planning: Getting Started
   a. Planning Guidelines
   b. Creating the Strategic Plan
      - Planning Council's Role
      - District Board's Role
3. Strategic Plan Components
   a. Situational Analysis
   b. Mission and Philosophy
   c. Operational Planning Guidelines
   d. Strategic Directions
   e. Calendar of Events
   f. Control Systems
      - Cost Center Operational Plans
      - Computer Controls and Instructional Auditing
4. The Quality Process and Strategic Planning
   a. Communication and Climate
   b. Employee Motivation
5. Contingency Planning

While strategic planning has been around for 50 or 60 years in private industry, it did not emerge as a major activity in education until the past few years. However, strategic planning in education has grown in significance and is now a critical activity in the quality process. One important reason for this emergence is education's need to effectively manage projects, departments, or cost centers in an environment characterized by constant change. It is a useful way to establish long-range goals and objectives for the school, individual managers, and other workers; and, since all employees are involved in the planning process, it is a vital part of participatory management.

Everyone in the organization should know what strategic planning is--and what it is not. Several defini-

tions have been used to help consolidate the thinking about strategic planning.

Peter F. Drucker, a noted management consultant, defines strategic planning as

> **the continual process of making entrepreneurial decisions systematically and with the greatest knowledge of their futurity; organizing systematically the efforts needed to carry out these decisions; and measuring the results of these decisions against the expectations through organized systematic feedback.**[4]

William R. Osgood defines strategic planning as the

> **process of making choices between alternatives that are available to any enterprise and that are mutually exclusive . . . . strategic planning involves the allocation of scarce resources and the strategic coordination of resources once utilized.**[5]

A distinction also needs to be made between the strategic planning process and the strategic plan itself. The two terms are not synonymous, and it is important to know that the entire activity requires both a process and a plan.

The Process and the Plan

By nature, the strategic planning process is a dynamic, ongoing activity throughout the organization; while the strategic plan itself is the most current written record of what was identified in the planning process.

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4 Peter F. Drucker, Management, Harper and Row, 1973, p. 125.

5 William R. Osgood, Basics of Successful Business Planning, AMACOM, 1980, p. 31.

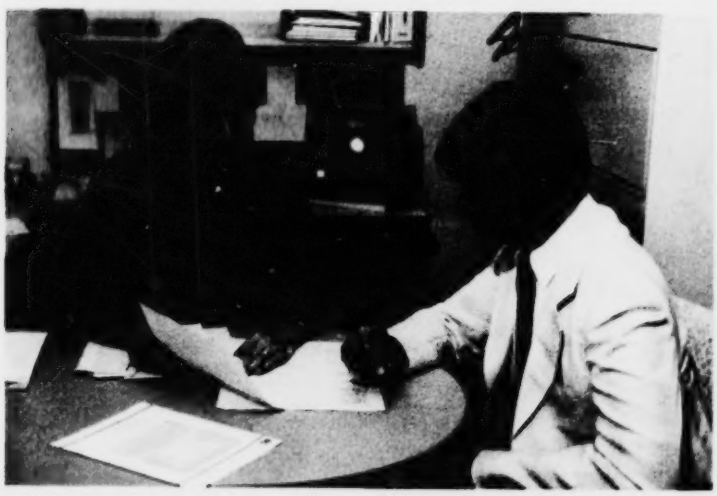
The Process

Involving employees at all levels of an organization is essential to the planning process--a key element in the Quality First philosophy. Since a quality organization recognizes the importance of every person's view and experiences within the work setting, the quality planning process encourages input from every employee and assures that their input will be included.

Built-in controls and periodic measurements of performance are also key elements of the planning process. By comparing actual performance to standards they have set, planners at all levels can avoid errors and misinterpretations in evaluating the plan's effectiveness.

The Plan

The strategic plan is a written statement of guidelines, decisions, and strategic directions developed as an outgrowth of the planning process. Because it is so closely tied to the process, the plan must be flexible enough



The strategic plan provides a written statement of the mission, direction, and goals of the college.

to allow for continual updating; each plan normally applies to only one year of the strategic planning process.

It should be written in simple, direct, easy-to-understand language, without ambiguous or confusing phrasing and jargon. If there are errors in or misinterpretations of the plan, it loses its credibility.

Implementing the strategic planning process in an educational institution is not an easy task. Most schools have always had some form of planning process which included such things as establishing goals and objectives relating somewhat to the mission and philosophy of the school. Strategic planning, however, involves more than mission, philosophy, goals, and objectives. It means designing a school-wide, ongoing process to develop and implement long- and short-range directions and involving all employees in the process.

Strategic Planning: Getting Started

Before deciding on an institutional strategic planning process, there are several fundamental questions which must be answered:

1. Where is your institution right now?
2. Where do you want your school to be in five years?
3. How do you get there from where you are now?
4. When do you want to get there?
5. Are you willing to provide the resources to carry out the planning process?

Planning Guidelines

One of the first things to do in the strategic planning process is to create planning guidelines. These guidelines outline the duties that need to be performed. They indicate who will do what, when activities will be

done, and how the institution will be organized for the strategic planning process.

The planning guidelines should be easy to read and understand. Like the plan itself, the guidelines should not contain confusing, ambiguous words or educational jargon. The guidelines are communications designed to provide concise information to everyone in the organization. They should contain several things:

1. Definition of planning terms
2. Statement of school philosophy and purposes
3. Planning tasks and deadlines - Some institutions also list trends and events that may have a future impact on the school.
4. Statement by the school administrators - The president, superintendent, or director of the school indicates through this statement his/her total support for planning in the organization. Without the support of the chief executive officer, the plan will surely fail.
5. Administrative guidelines for budgeting

These planning guidelines are designed for institutional use. They complement the Strategic Planning Statement which is also a public document for use outside the organization.

For example, the strategic planning process which was introduced to FVTC in 1985 has required persons from throughout the organization to meet to plan where the organization will go. This has required a time commitment by many persons from all FVTC work settings. For FVTC's strategic plan to be effective, it also needed to be interrelated with the district budget; therefore, persons outside the financial offices of the district have become involved in making decisions about planning for financial resources.

The FVTC long-range (strategic) and short-range (operational) planning model contains several major stages:

I. Overall Planning

A. Review the planning process annually.
B. Conduct training.
C. Obtain understanding and commitment.

II. Strategic Planning

A. Do research.
B. Construct the strategic plan.
C. Obtain approval of strategic plan.
D. Issue the public and institution strategic planning statements.

III. Operational Planning (Implementation)

A. Set short-range objectives (related to budget and guidelines).
B. Determine available resource levels.
C. Prepare form for assessing objectives (Operational Planning Workbook).
D. Conduct training and awareness sessions.
E. Implement and develop Test Center information.
F. Construct the preliminary district plan.
G. Obtain consensus on the action plan.

IV. Resource Allocation

A. Identify resources.
B. Finalize the operational plan.
C. Develop contingency plans.

V. Director's Operational Plan and Budget Approval

VI. Evaluation and Feedback

These stages progress in an orderly and logical sequence to provide a basis for effective planning.

Creating the Strategic Plan

Once the planning guidelines have been written and circulated, the process for the design of the strategic plan begins. To ensure effective and continual coordination

of the planning process, it is essential that someone in the organization be given responsibility as the planning coordinator. No less than a half time assignment is needed. This creates authority for the planning functions and gives the person time to work closely with the college's departments and staff.

The Planning Council's Role

The planning coordinator works with the chief executive officer and the administrative cabinet in the selection of a district planning council. The planning council consists of employees from throughout the school district including students, faculty members, educational support staff, management staff, and one member of the District Board. The school's chief administrator is usually an ex-officio member of the planning council. (See Appendix H for FVTC's Council membership.)

The internal planning guidelines clearly define the role of the planning council. The council is the direct link to district employees for input into the strategic plan. FVTC's District Planning Council has the responsibility of discerning long-range strategic issues for the District and pulling together the strategic plan. It meets monthly to discuss short-range operational planning activities. Ultimately, the planning council approves the strategic plan and sends it to the district administration for final review.

The District Board's Role

The formal authority for approving the district's strategic plan is the District Board of Directors. Throughout the design of the strategic plan, the Board and the administration provide input into the design of the strategic directions for the district. These strategic directions, or long-range goals, form the basis for the operational plans which the cost centers develop as a

first step in preparing their operational plans and budgets.

The Board insures that operating plans from the various cost centers of the school are consistent with the overall district strategic plan. This process occurs during the budget hearings conducted by the administration and District Board.

Throughout the budgeting process cost-center managers relate their budget to the District Director's operational plan, and likewise, relate the operating plan to the district strategic plan. Board members and administrators understand that budget cuts may also cause operational plan changes.

Strategic Plan Components

The actual organization of the strategic plan depends on the school district itself. The district planning coordinator generally prepares an outline of the components that should be included (Table 8). These may vary somewhat based on the individual needs and uniqueness of each school.

Table 8

Strategic Plan Components

	Audience	
	Internal	Public
· Situational Analysis - Background Information	Yes	Yes
· Mission and Philosophy	Yes	Yes
· Operational Planning Guidelines	Yes	No
· Strategic Directions	Yes	Yes
· Administrative and Budget Guidelines	Yes	No
· Calendar of Events - Internal	Yes	No
· Control Systems - Evaluation of Results	Yes	No

Situational Analysis - Background Information

Every plan contains a situational analysis. This includes the major challenges and opportunities as well as basic research information to assist managers and supervisors in developing effective operational plans. In this analysis, the planning and research staff look at both external and internal factors:

External Factors

1. Potential students and markets of the district
2. Competitive schools and agencies in the region
3. Technological changes which will influence education
4. Public opinion and social trends related to the mission of the school
5. Projected state and federal funding and other economic factors which may influence the fiscal picture of the district
6. Organizations and business firms within the district
7. Local, state, and federal, as well as international relations

Internal Factors

1. Comparative reports of student enrollments by target markets for the past three years
2. A listing of instructional capabilities which include the instructional programs, by division, of the district
3. A report of the performance of each instructional division which shows each structured program and instructional category, listed by division or department (current and past enrollment data is included)
4. A listing of enrollment data which is analyzed to reveal trends so that new enrollment projections can be developed
5. Comparative reports of graduate placements in related occupations for the past three years
6. Reports of attrition rates
7. Financial information, including costs per full-time equivalent student

8. A candid and detailed statement of the school's financial position clearly presented so that operational planners throughout the district can effectively comprehend the financial picture
9. A general listing of in-service activities and the overall professional development plan which reveals the strengths and weaknesses of the development plan as it relates to the district strategic directions. It is essential that the goals and objectives of individuals relate to their performance appraisal.

These factors are listed to make it easier for all employees to prepare for the challenges and opportunities offered by the college and to draw on their ability to cope with the changes which are occurring.

Mission and Philosophy

The philosophy is a statement of general beliefs concerning the role of the district in providing education and training.

The second section of the strategic plan is a detail of the school's philosophy, mission, and purpose. The philosophy is a statement of general beliefs concerning the role of the district in providing education and training, while the mission details the broad training and educational areas of the district. The reasons for the school's existence as identified and approved by the District Board are outlined. (See Table 9 for FVTC's Mission Statement.)

The mission details the broad training and educational areas of the district.

Operational Planning Guidelines

The planning guidelines stem from the goal statements and planning assumptions. They provide the focus for the development of operational plans and budgets. This "action" level of planning is the point at which specific programs and projects are instituted and resources allocated. Although this is the lowest level of decision making in the hierarchy of strategic decisions, the planning guidelines are very important in the process of quality interactive planning. The best mission, soundest directions, and most brilliant strategy will go for naught unless they are translated into action

Table 9

FVTC Mission Statement (District Purposes)

Fox Valley Technical College perceives its mission to be consistent with the State VTAE mission which is spelled out in Section 38.001 of the Wisconsin Statutes. More specifically, the mission of the District is:

1. Principally to:
   a. Provide occupational education, training, retraining, and upgrading programs requiring competencies below the baccalaureate level, including the training of apprentices, that enable residents to obtain the knowledge and skills necessary for employment at a technical, paraprofessional, skilled, or semiskilled occupation. Such programs include general education courses to facilitate overall student development and achievement in occupational skills training. The District Board maintains courses and standards acceptable to national, regional, and professional accrediting agencies and associations.
   b. Provide customized training and technical assistance to business and industry to foster economic development and the expansion of employment opportunities through the growth of existing industries and the attraction of new business to this region.
2. Additionally to:
   a. Contract with secondary schools to provide educational opportunities for high school age students to enhance their benefit from post-secondary education and potential for employment. This also involves coordination and cooperation with secondary schools to facilitate the transition of secondary school students into post-secondary vocational education through curriculum articulation and collaboration.
   b. Provide additional services needed to facilitate the entry or reentry of adult workers into post-secondary vocational education.
   c. Provide community services and avocational or self-enrichment activities.
   d. Provide education in basic skills to enable students to function effectively at a literate level in society.

programs that carry out the strategy and serve to fulfill the directions (goals) and mission of the school. This means that instructional and noninstructional strategies must be translated into operational and budget plans.

At FVTC, guidelines are prepared annually by the administrative cabinet and the director to provide information and guidance for staff in preparing operational plans and budgets. The guidelines consist of an analysis of the present constraints, directives, initiatives, and opportunities that staff should consider as they complete the three- to five-year (long-range) and one-year (short-range) cost center plans and budgets. Operational plans and cost center budgets are prepared concurrently to insure consistency between the two processes.

Strategic Directions

Strategic directions are long-range goals which contain the basic direction for the district. These are updated yearly, based on the staff and board's projections about the future of the district.

Strategic directions are long-range goals which contain the basic direction for the district.

Calendar of Events

The final section of the strategic plan features the calendar of events for the current planning year. This calendar contains a listing of each of the major events which occur in the district planning and budgeting process and the expected completion dates. There is agreement with department managers before the dates are set.

It is important that managers and supervisors responsible for the design of the operational plans and the various cost centers completely understand and agree with the deadline dates shown on the calendar. This input into the design of the deadline dates is essential. Once these deadline dates are established, they must

be adhered to without fail. If any department falls behind in the submission of the data needed for the strategic plan or the operating plan, then the whole process is delayed.

Strategic Plan Control Systems

A control system is an organized approach to observing, but not directing, actions which determine whether the process is functioning according to the operational plan. Following the approval of the strategic plan, the cost center managers begin to develop their operational plans.

Cost Center Operational Plans

The operational plans contain information about the direction the cost center will take during the next budget year. Goals and objectives are listed and there is an indication of how each of these goals and objectives relates to the strategic plan itself. The operational plans are developed with input from all employees in each of the school's cost centers. They are approved by the immediate supervisor or manager.

Finally, each administrative unit, which contains several cost centers, has a consolidated operational plan for the entire unit. This plan is a compilation of all of the operational plans which were developed in the cost centers of the unit. The unit plans are then reviewed, discussed, and revised into a District Director's Operational Plan which has an institutional perspective.

The goals, objectives, and detailed plan for the cost center contained in the operational plan are used in the appraisal system. These systems of control and evaluation relate directly to the strategic plan, and specifically to the cost center operational plan.

The district control system includes detailed job descriptions for each staff member, together with standards of performance for each job task which is listed. These standards of performance do not project maximum levels of productivity, but do state the minimum acceptable level of performance expected for success on the job.

There are several reasons standards of performance must be precise and quantifiable:

- The more precise the standards, the less subjective the evaluation.
- The more precise the standards, the easier it is to measure individual productivity or results.
- The more precise the standards, the easier it is to identify problems and establish corrective programs.

In addition to the job description and the standards of performance for each job responsibility, each manager has specific individual objectives. These are job-related activities which encourage an employee to perform above and beyond the duties outlined in his or her job description.

At FVTC, each manager writes up to five objectives for each year. The objectives must have some relationship to the job description, standards of performance, and operational plan of the cost center. In this way, the appraisal system used is part of the control function for the strategic plan and the operational plan. In addition, these objectives may be used in merit programs where persons who complete objectives above and beyond the standards of performance receive additional compensation. Objectives may be incorporated in subsequent operational plans.

As in any appraisal system, the employee and his/her immediate superior should agree both on the standards of performance and on the objectives suggested by the

Communication between the employee and his/her supervisor is vital.

employee. Once they agree, the employee has a clear understanding about his/her job requirements for the year. Continued communication between the employee and his/her supervisor is vital, since things may change and necessitate revision of the plan. Workers meet with their supervisors a minimum of two times per year to analyze performance based on the criteria spelled out in the job standards and objectives.

Computer Controls and Instructional Auditing

In addition to the individual appraisal process, computer reports are used to provide data for the operational planning process. These reports, called Stage I Audits, vary based on the data required and are prepared for each of the school's 145 cost centers.

At Fox Valley Technical College, computer reports are compiled in a monthly report titled "Indicators of District Health." This report, given to the Board during the regular meeting, contains three-year comparative data on the following:

1. Full-time equivalent students
2. Admissions and registrations
3. Withdrawals
4. Graduations
5. Job placements
6. Student program utilization

"Education for employment"

FVTC Motto

All FVTC graduates receive a follow-up survey six months after completion; the average response rate is 90 percent. The information gleaned from the survey includes the number of people working, whether their jobs are related to the program from which they graduated, their salaries, and the number of hours they work per week. This information is a critical component of the audits because FVTC's motto is "education for employment." If our graduates are not finding employment, we must either discontinue or modify the

program to meet the needs of local employers who hire our graduates.

The costing of the programs is also analyzed during the Stage I Audits. This information is divided into department costs, division costs, and district overhead costs. Each of these costs is also delineated by cost per student hour, cost per credit, and cost per full-time equivalent. By providing information on the cost of the programs and comparing it to the district's overall costs, we can determine whether the programs are within an appropriate cost range.

The Quality Process and Strategic Planning

Communication and Climate

The most carefully researched and documented strategic plan can go astray if there are unresolved communication problems. Since good strategic planning causes change to occur in the organization, continual communication is critical throughout the process. Introducing change to all employees in the least disruptive and most nonthreatening way, as well as getting employees involved right from the beginning, is essential to the quality first climate.

Continual communication is critical throughout the process.

Establishing a good climate for strategic planning is a part of the Quality First process since it produces an attitude of concern, cooperation, and sharing of information. This climate should foster a sense of team spirit and cooperation which will increase chances of making the right decisions throughout the organization. Such an organizational climate fosters constructive criticism. It allows managers to get an overview of the entire operation. It encourages acceptance of the strategic planning process and seeks to reduce anxiety over the unknown or fear of change. Having such a climate

The climate should foster a sense of team spirit and cooperation.

helps employees keep school district goals in mind and fosters the development of creative, innovative thinking.

The chief executive officer and administrators play important roles in establishing this climate for planning by emphasizing its importance and fostering participation by all employees. The head of the college also encourages managers, coordinators, and supervisors to meet and discuss all aspects of the strategic plan with an open mind.

Employee Motivation

Managers cannot motivate employees . . . employees motivate themselves.

FVTC's Quality First process demonstrates the importance of employee motivation. FVTC administrators believe that managers cannot motivate employees; rather, employees motivate themselves when the manager provides an atmosphere free from fear and allows employees to grow in new areas and to reach new levels of productivity.

A manager who is effective in strategic planning establishes the Quality First climate to help his or her people achieve their desired standards of performance and objectives. If employees are motivated, the objectives can be reached; if they are not, objectives may not be met and the strategic plan may fail.

Supervisors and managers in an educational environment, as in any business or industry, play a vital role in making subordinates feel important. They must communicate, however briefly, with each person every day and must show each employee that they are concerned about them as individuals.

Good supervision also includes acknowledging people who have done a good job and letting them know, continuously, that the organization takes pride in their work. When a department or program receives an award, the credit for that award should be shared with

all department employees. If errors occur, the manager or supervisor should accept the ultimate responsibility. Corrective actions may be suggested to employees but the failures or shortcomings should not be broadcast to people outside the department. The best effort a manager in a quality environment can make is to design control systems so that errors are prevented before they occur.

As part of the process, too, a supervisor must get feedback from employees. Because employees often know their job better than their manager does, they have valuable information which can be used for improving the way jobs are done. Everyone in the department should be treated equally and tasks assigned equitably. The manager must be as objective as possible and develop a reputation among his or her employees for fairness.

Employees often know their job better than their manager does.

Contingency Planning

Contingency planning helps the school managers deal with possible future events or conditions that can stand in the way of achieving goals of the strategic plan itself. Strategic plans are necessary to cope with new challenges which may occur for a variety of reasons. Contingency plans are, therefore, alternative action plans that can be implemented if events occur that were not anticipated in the strategic plan. These plans are used to help everyone know what to do if something serious goes wrong during the budget year.

Contingency planning is an absolute requirement to help the school officials avoid being caught by surprise. This kind of planning increases the likelihood that goals and objectives will be maintained, despite any disaster which might occur.

Contingency plans are specific and are carried out according to a previously agreed on schedule. The process of contingency planning is unique to each school district, but any written plan of this nature has several requirements. The contingency plan should have a timetable and list of all the major subject areas to be addressed. Distribution of the contingency plan should be limited to a very few people, usually only those with a "need to know." Included in the plan is a list of activities to put the contingency plan into action and the procedure to notify the people when the contingency plan is implemented.

Contingencies should be selected on the basis of their probability and their expected impact on the school district. A way to do this is to develop a list of four or five contingencies ahead of time based on past experiences.

For example, one contingency might relate to a substantial unexpected decrease in financial resources in the middle of the school year. A contingency plan for this might show specific actions to be taken to curtail or reduce spending to cope with the financial shortfall.

Another contingency plan might outline action which will be taken if enrollment does not reach strategic plan projections. Since the budget is based on the strategic plan and funds are allocated accordingly, it may be necessary to modify cost center accounts to match real enrollments in this case.

In summary, a contingency plan is developed for four or five unplanned events which may occur during the fiscal year. For each unplanned event identified, a plan is developed to indicate to the appropriate people the alternatives to be used to cope with the event.

Chapter 4
Competency-Based Curriculum

Chapter Overview

This chapter describes a curriculum development approach which supports competency-based instruction. In this chapter, the term "curriculum" refers to a complete, detailed plan for learning. This plan may be for a program, several courses, a single course, or part of a course such as a unit or a module.

The author contends that a college occupational program requires such a task-oriented curriculum design as a quality standard in order for the school to be effective.

The curriculum outlines the roles of students and instructors in the process of instruction. In addition, it communicates what is to be accomplished during the learning experience, and specifies the resources required. Finally, it shows how achievement of learning goals will be evaluated in a process called objective-based evaluation.

In competency-based instruction, teaching content is determined by analyzing the job tasks which must be performed by the person being trained. Most any teaching technique, whether group-based or individualized, can be adapted to competency-based instruction.

Chapter Concepts

1. Relationship of Competency-Based Instruction to Quality
2. Curriculum Development Flowchart
   a. Occupational Analysis
   b. Program Goals
   c. Task Grouping and Sequencing
   d. Performance Objectives
   e. Objective-Based Evaluation
   f. Learning Activities and Resources
   g. Management Systems
3. WisCom at FVTC

Competency-Based Instruction and Quality

Vocational-technical curriculum is not valid unless it is based on job requirements.

Next in importance to qualified instructors is the curriculum used to support the learning process. Designing curriculum in a competency-based format is critical since a vocational-technical curriculum is not valid unless it is based on job requirements.

Curriculum department staff works with occupational analysis data in creating a curriculum--a complete, detailed plan for learning. This plan helps to ensure the quality and consistency of learning outcomes.

The term "curriculum" refers to a complete, detailed plan for learning. The plan may be for a program, several courses, a single course, or a part of a course such as a unit or a module. The learning activities specified in the curriculum provide the necessary experiences for students to gain knowledge, skills, and attitudes essential for job performance in the target occupation.

The competency-based curriculum has three purposes:

1. It establishes the students' and the instructors' roles in the process of instruction.
2. It communicates to interested persons--employers, students, faculty, and others--what is to be accomplished in the instructional program.
3. It specifies resources required to accomplish the instructional goals and tells how the accomplishment of these goals will be evaluated.

The process of curriculum design consists of several steps. Table 10 describes a curriculum development flowchart for use in a competency-based instructional program.

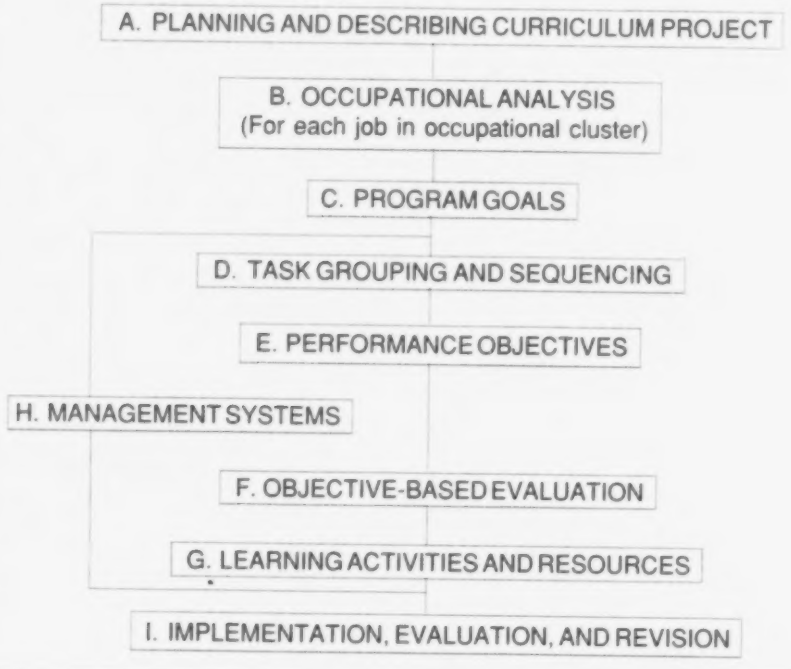
The term "competency" refers to an individual's ability to perform at an acceptable level. It is a qualitative term, not one that describes a specific level of job activity. In some circles, however, the word "competency" is used as a synonym for the word "task." In others, it refers to a larger unit of activity called a "duty." In this publication, competency is the ability to perform job skills in a competent way. Competency-based instruction, therefore, refers to an approach used to determine what skills should be taught and how achievement is evaluated.

Competency is the ability to perform job skills in a competent way.

The terms "competency-based instruction" and "individualized instruction" mean different things. Individualized instruction is a teaching method which focuses on student-directed progress within a well-

Table 10

Curriculum Development Flowchart


A. PLANNING AND DESCRIBING CURRICULUM PROJECT
B. OCCUPATIONAL ANALYSIS
(For each job in occupational cluster)
C. PROGRAM GOALS
D. TASK GROUPING AND SEQUENCING
E. PERFORMANCE OBJECTIVES
H. MANAGEMENT SYSTEMS
F. OBJECTIVE-BASED EVALUATION
G. LEARNING ACTIVITIES AND RESOURCES
I. IMPLEMENTATION, EVALUATION, AND REVISION

Both group-based and individualized instruction can be used effectively with a competency-based curriculum.

defined framework. Most educators agree that this student-centered method is ideal for competency-based instruction. However, both group-based and individualized instruction can be used effectively with a competency-based curriculum. Therefore, the primary difference between individualized instruction and competency-based instruction is that the former is a type of methodology while the latter is a curriculum design approach that focuses on job tasks and measurable objectives.

Occupational Analysis

Since the primary purpose of an occupational program is preparation for employment, it seems logical that designing curriculum using job tasks and standards is appropriate. While there may be differences in opinion regarding teaching methodology, there is no argument about maintaining a curriculum which is based directly on the job itself.

Curriculum should be based directly on job requirements.

The development of competency-based curriculum always begins with an occupational analysis. This process examines an occupation and documents the knowledge and skills required for successfully completing the requirements of that occupation. The results of this analysis may be reported in several different ways. Table 11 shows one format for reporting levels of

Table 11

Occupational Analysis Format Levels of Specificity

specificity, adapted from the Program Development Process Handbook, by R. D. Steeley of the Michigan Department of Education.

Job descriptions usually provide the foundation for an occupational analysis. The description includes the duties, responsibilities and other characteristics of each job within the occupational cluster being studied. It is helpful to collect a wide variety of job descriptions from employers before undertaking the occupational analysis. A sample job description is found in Table 12.

Table 12

Sample Job Description

JOB TITLE AND NUMBER: Shielded Metal Arc Welder 810-384-014 Division of Training (D.O.T.)

DUTIES AND RESPONSIBILITIES:

The shielded metal arc welder is called on to lay out, cut, weld, grind, braze, and solder metal parts of all types. Blueprint reading of welding symbols and diagrams is an every day part of the job. Larger shops will allow for considerable specialization, with smaller establishments calling for considerable versatility.

OTHER CHARACTERISTICS:

(Math and reading level, working conditions, etc.)

Reading Level: 8th grade level ability preferred.
Math Ability: Facility with whole numbers, fractions, angles, percents, and decimals.
Communications: Ability to communicate understandably.

In addition to a job description, two other terms of specificity are used in an occupational analysis. One of these, the term "duty," refers to a group of related tasks which constitute a major area or segment of work within a job. The other term, "task," can be defined as a

measurable, significant element of work from a larger occupational activity (duty) having definite beginning and ending points. Tasks are very useful in designing learning experiences, specifying tools and equipment, determining needs for facilities and other resources, and assisting in designing performance objectives and evaluation criteria.

Tasks are the key building blocks that make up an occupation; and in an occupational analysis, each task performed by workers is identified. A task generally results in some type of product. The product may be the completion of a physical activity involving tools and/or materials or the tangible outcome of decision making.

Jobs in an occupational cluster can be categorized in a "Job Mobility Chart." A sample chart is shown in Table 13. The chart serves as a useful tool for identifying which jobs are to be addressed by an instructional program. Job Mobility Charts also communicate employment opportunities to students and the public at large.

An occupational analysis involves the study of each job within an occupational cluster. Each job is analyzed separately, and the results are merged later as program goals and tasks are specified.

There are various techniques which can be used to conduct an occupational analysis. Following is a brief description of the major techniques:

- **Observation** - An observer monitors and records the activities of workers at the job site.
- **Task Survey** - A preliminary task list is distributed to incumbent workers for reaction. Provision should be made to expand the listing as needed.
- **Workshop** - Persons working in an occupation participate in a structured brainstorming activity to define a task listing or to react to a previously

Table 13

Sample Job Mobility Chart

PROGRAM/OCCUPATIONAL CLUSTER: Welding/Flame Cutting #20-442-10

JOB TITLES IN MOBILITY SEQUENCE

POSSIBLE EMPLOYMENT WITH LESS THAN PROGRAM COMPLETION	
Flame Cutter	819.666-010
Flame Cutter Helper	819.666-010
POSSIBLE EMPLOYMENT FOR PROGRAM GRADUATES (entry-level positions)	
Shielded Metal Arc Welder	810.384-014
Welding Machine Operator	810.666-010
Welder Apprentice	819.361-014
Metal Fabricator Helper	619.685-066
Metal Fabricating Shop Helper	619.686-022
POSSIBLE EMPLOYMENT WITH ADDITIONAL EDUCATION OR EXPERIENCE	
Welding/Fabricating Shop Owner	819.131-014
Welding Foreman/Supervisor	819.131-014
Fabricator/Assembler	809.381-010

developed task listing. This technique is called DACUM (Designing a Curriculum).

- **Interviews** - Workers are interviewed to identify duties and the related tasks which are performed.

Since several tasks are normally included in each duty area, the duties which make up a given job should be determined before the occupational analysis begins. Sources of information in compiling job duties include:

- Advisory committee members
- Job descriptions
- Trade and professional journals
- Existing instructional programs
- Accreditation agencies
- Professional associations and organizations
- Current employees and their supervisors

Since the task listing provides the basis for curriculum content, the task statements should be clear and con-

cise. They should be simple, declarative statements that begin with an action verb and address a single activity.

After persons employed in the occupation agree and verify that the duties and tasks contain no bias, the curriculum developer formulates the final task list. Table 14 shows a task listing format which accommodates the frequency rating and the importance rating of each task.

Table 14

Task Rating Form

Job Title and No.: Shielded Metal Arc Welder 810.384-014 (D.O.T.)

Ref. No	Duty/Task	Indicate Your Response by Circling the Number	
		Frequency	Importance
A	Operate shielded metal arc (SMA) welding equipment.	4 = Several Times a Day 3 = Once a Day or Several Times a Week 2 = Once a Week or Several Times a Month 1 = Once a Month or Less	1 = Not Important 2 = Moderately Important 3 = Important 4 = Very Important
A1.	Weld carbon steel w/SMA.	4 3 2 1	1 2 3 4
A2.	Weld stainless steels w/SMA.	4 3 2 1	1 2 3 4
A3.	Weld cast iron w/SMA.	4 3 2 1	1 2 3 4
A4.	Cut cast iron with carbon air arc process.	4 3 2 1	1 2 3 4

Program Goals

Program goals are general statements of desired learning outcomes. Each goal statement encompasses one or more duty areas. The goals are stated clearly to be understood by students and by those who will write performance objectives and design learning activities. Program goals are useful for communicating informa-

tion about the program to students, faculty, counselors, employers, and the general public.

Task Grouping and Sequencing

After program goals have been written, the instructional developer determines the format for instruction and groups the duties and tasks into courses. Various definitions and guidelines are used to describe these relationships.

Course: a number of related performance objectives taught under a single title.

First, let's identify what a course is. A course can best be described as a number of related performance objectives taught under a single title with a credit value and hour assignment. Usually, objectives are sequenced logically from simple to complex in a course.

As subsequent curriculum design activities occur, program goals are used to define the target toward which all planning for competency-based programs must be aimed. While program goals are the destination, the routes and modes of travel for the student will vary.

Additional factors that influence the grouping of program goals, duties, and tasks are:

1. Facilities and equipment needed
2. Instructional methods to be used
3. Scheduling format to be used (i.e., semester, quarter, multiple entry sequences)
4. Student abilities and learning preferences

Once this grouping is completed, the course content outline can be prepared reflecting the duties and tasks included. Course descriptions are written; course numbers, credit hours, and contact hours are assigned; and prerequisite courses are identified.

Performance Objectives

At the heart of a competency-based curriculum are performance objectives. While program goals define the broad guidelines for student outcomes in a program, performance objectives identify the specific achievements. Students work to achieve a series of performance objectives to reach program goals.

Each performance objective describes student performance, the condition under which that performance must occur, and the minimum standards of performance which are required. The objective is written so both the instructor and the students know exactly what is required and when the student effort has been successful. Each performance is derived from one or more of the tasks, and each objective has a direct tie to one or more of the established goals.

Objectives are written so both the instructor and the students know exactly what is required and when the student effort has been successful.

All components of the objectives (conditions, performance, and evaluation criteria) are written so that the student's achievement can be precisely measured. Performance objectives provide the basis for determining student achievement.

Objective-Based Evaluation

The purpose of testing in a competency-based program is to determine whether each student has achieved the performance objectives. In such an approach, the evaluation process is called objective-based evaluation. Some educators call it criterion-referenced testing. In this type of evaluation, the test instrument and testing situation must match the performance objective--nothing more, nothing less. The students and the instructor, therefore, know what performance will be tested, measured, and evaluated.

The purpose of testing in a competency-based program is to determine whether each student has achieved the performance objectives.

Objective-based evaluation can take on as many forms as there are performances. It may be a computer-based or paper-pencil test, a job performance test, or a verbal evaluation. Whatever the method used, the learner's performance or achievement is compared to each stated course objective.

Learning Activities and Resources (Teaching Methodology)

Once the objectives are written and the evaluation system developed, the instructor determines the teaching methods to insure maximum learning. These learning activities involve the integration of facilities, equipment, instructional materials, and teaching aids. The selection of teaching methods is based on the professional judgment of the teacher, but usually the most influential factor is the student performance required as specified in the performance objectives. Methods selected to teach cognitive (knowing) skills will probably be different from those selected to teach psychomotor (doing) skills or affective (attitudinal) skills.

When selecting instructional techniques, it is well to select the method that requires a similar response to that called for in the performance objective. The best teaching strategy should enable students to do exactly what is called for in the objective. Student responses should approximate the responses required when the student is actually employed. Giving the student an actual work setting experience is the best possible preparation for employment.

The teacher should select methods which permit the student to give the greatest possible number of correct responses.

The teacher should also select methods which permit the student to give the greatest possible number of correct responses. This is learning theory--student success ratios are directly correlated with student learning. This is especially effective in occupational education.

A final factor to consider when selecting teaching methods is a study of the past experiences of each student. If the student has prior educational or work experience in the course content, provisions should be made to give the student advanced credit or advanced placement in a course.

Provisions should be made for advanced credit or placement.

In occupational education, it is desirable to teach psychomotor (manipulative) skills by enabling students to use the tools, equipment, and materials that are actually used in the occupation. Learning alternatives such as cooperative education experiences or internships are most desirable. More post-secondary schools are requiring collaborative work experience plans for every structured occupational program offered.

Management Systems

When the curriculum has been designed and the teaching methods have been determined, a management system to support the teaching/learning process must be developed. The management system includes all the people and all of the support systems which ensure that a competency-based curriculum system is effective throughout the school district. Several elements are included in the management system in the various service and support departments of the school. Curriculum design, media development, word processing, printing services, data processing and information systems, public information and marketing, admissions and registration, special services, and counseling are all a part of this vast network at FVTC.

The management system should be in place before starting a comprehensive, flexible, competency-based and multiple entry/exit system of instruction. An effective management system is crucial to the operation of a competency-based program.

A good computer system will assist in student admissions, registration, accounting processes, and in most of the other support departments. A computer system may also be used in the formatting and detailing of the competency-based curriculum. There are several systems that have been developed throughout the country, some of which are very useful. One such system was developed by FVTC staff. This formatting system for competency-based curriculum is called "WisCom."

WisCom

The Wisconsin Competency-Based Occupational Curriculum Data System (WisCom) is a computer-based system for recording curriculum information. It is used by educators who develop curriculum or are responsible for managing curriculum resources and instructional services.

The WisCom Data System grew out of a need to facilitate the sharing of curriculum materials between vocational-technical schools. The ability to share such materials may lead to uniform criteria and organization, as well as documentation of the curriculum in clear and concise language. The intent is not to create uniformity to the exclusion of individual school autonomy. Rather, the purpose is to maximize the financial return from curriculum development resources to a degree felt desirable by participant educators.

WisCom is an easy system to employ. Curriculum information is keyed on a computer system (either mainframe or microcomputer) with the help of a set of formatting templates. All aspects of the curriculum, including outlines, tasks, objectives, student handouts, evaluations--even textbooks and lab manuals--are put into designated computer files.

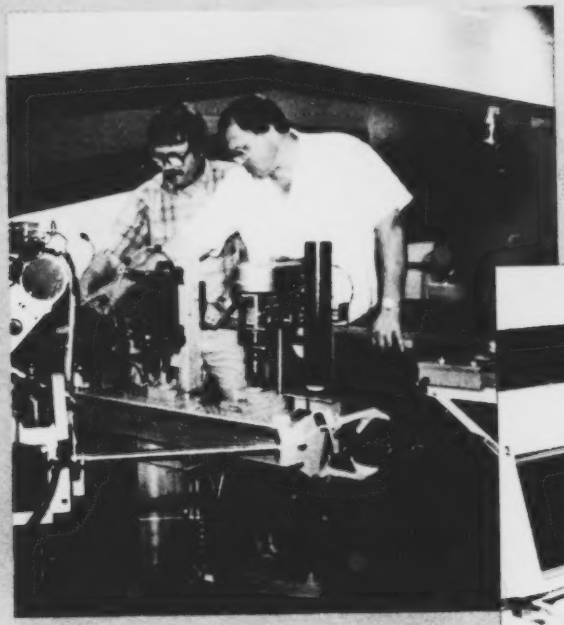
Curriculum information is keyed into computer files with the help of a set of formatting templates. The output is a set of materials which provide support for every aspect of the planned instruction.

The output of the program is a complete, detailed plan for learning--a complete set of curriculum materials which provides support for every aspect of the planned instruction.

The WisCom System has several important advantages:

1. Provides a uniform information or data base for all curriculum information in the school system.
2. Insures that all newly developed curriculum meets the uniform criteria for essential elements and organization.
3. Provides for simple input and revision with comprehensive word processing capability for all curriculum revisions.
4. Communicates the learning plan in a more professional way to students, faculty, and other client groups.
5. Facilitates the sharing of curriculum among educators, programs, and schools.
6. Results in a cumulative benefit to the school district because curriculum becomes a resource much like plant and capital equipment.

The quality of curriculum products produced within the WisCom System has led to numerous curriculum projects which have been used in economic development contracts with business and industry in the Fox Valley Technical College District and across the nation.



Chapter 5
Perpetual Enrollment/Graduation (PEG)

Chapter Overview

The former American Vocational Association (AVA) Executive Director and Editor and Chief of the AVA Journal, Lowell A. Burkett, sums up the concept of Perpetual Enrollment/Graduation (PEG) in these words:

> Unless post-secondary institutions permit open entry and open exit and relax academic requirements, the ultimate result could be that vocational programs designed to prepare students for job entry will move out of public education.
>
> Source: AVA Journal, November 1975, Editorial

Students and employers have a right to insist on answers to these questions:

1. Why are occupational students restricted to enrolling on one or two days of the year?
2. Since most students in a traditional program graduate only in January or June, are these the only times of the year that businesses and industries need employees?
3. Why do educators in traditional schools continue to insist, by their actions, that all students are the same, learn at the same rate, and learn best in the same manner?

Occupational education during the 1990s will dramatically change--with a major focus on retraining. Regional Learning Centers will be developed and new home learning tech-

nologies will be employed. The linking of regular vocational programs to these centers and to homes through computer technology and television will provide a viable approach to delivering education. The home may become a major focus for information systems during the 1990s, with the conversion of the ordinary television set to an instructional machine with computer terminal.

Most occupational educators agree that a quality conformance requirement includes the responsibility to design competency-based curricula using these technologies, which enable students to proceed at their own pace toward an educational objective. The PEG concept, in its widest approach, appears the best solution to realize this conformance requirement.

Chapter Concepts

1. PEG Defined
2. Designing PEG
3. The FVTC Flexible PEG System
4. An Industrial Model

Another quality conformance requirement is the use of a multiple entry/multiple exit system of instructional delivery that permits the learner to enter classes at times other than only the beginning of the traditional school terms. Entry points under this multiple entry/exit concept are variable and frequent occurring once every several months, monthly, weekly, or even daily. The multiple exit facet of this concept in its narrowest context is the mirror of multiple entry. As in perpetual enrollment, the learner may also graduate at times other than the traditional end of the school year.

Perpetual Enrollment/Graduation

The willingness of faculty to depart from tradition has led to Perpetual Enrollment/Graduation.

The willingness of faculty to depart from traditional calendars and schedules and to design programs around the needs of students and employers has led to an individualized system of learning at Fox Valley Tech-

nical College known as Perpetual Enrollment/Graduation (PEG).

PEG is a modified version of a multiple entry/exit plan. FVTC students generally enroll at 3-, 6-, 9-, 12-, and 18-week intervals, although in developmental courses students may enroll daily. Instruction is presented through an individualized approach and students move through a program at their own pace.

Program content is based on clearly identified, measurable competencies. Performance objectives, which describe a student's ability to perform after instruction, are written for each competency. In this task-oriented environment, student achievement is measured against performance objectives after the students experience activities in "real-life" laboratory settings.

Complex media systems and computer-based materials are used as resources to assist staff and students in this flexible and complex system. The use of media and computers in providing information to students frees the instructor to assist students who need help.

The use of technology is essential if a multiple entry/exit system is to be effective in occupational education.

Under PEG, the instructor becomes a facilitator of learning activities rather than a disseminator of information. According to school faculty, competency-based and individualized instruction requires teachers to work more on a one-to-one basis with their students. Greater responsibility is placed on students with this approach and faculty who have been involved in this type of program for some time feel this is the way it should be.

PEG offers many advantages.

Perpetual enrollment/graduation appears to offer many advantages over the more traditional systems. New students, including those from other educational institutions, are able to enter without long delays. Employer-sponsored individuals, including those participating in governmental agency programs, experience little or no delay in entering technical programs or courses. Likewise, those completing required course work are not leaving school en masse as in the traditional educational calendar, but at points spaced throughout the year according to the students' completion dates. Such a variable exit procedure appears especially valuable when meeting the job market need for graduates.

Variable (multiple) entry/exit has come to mean much more than just calendar dates; it means individualization at its best--students enter and are placed according to their individual needs and abilities. Past educational and occupational experiences are measured against the criteria of the competencies in the program. This allows for proper advanced placement in a course or advanced standing where credit is granted for prior course completion.

Designing PEG

In its narrower sense, the design of PEG can be accomplished simply by breaking long courses into numerous shorter courses. For example, a 36-week vocational-technical program is normally taught in a

traditional two-semester school year. Under a narrow PEG approach, each course in that program could be broken into courses that are six weeks in length. Then, at the end of the first six weeks, new courses would begin and new students would be allowed to enter. Difficulty occurs only if any of the new courses require prerequisite knowledge or skills gained by other courses which were previously taught. The PEG concept requires careful planning when dividing content into shorter sequential units.

The PEG concept requires careful planning.

In addition, this method forces the educator to design a program which provides students with a full slate of courses during every entry point in the program. The instructional planner must structure an educational program so that there are no prerequisites for any course or so that the prerequisites are available throughout the school year. If that happens, PEG can be accomplished by a simple division of the curriculum into free-standing time blocks. This would be closely akin to the traditional semester format, except that students enter and exit more frequently.

There are other ways to design a multiple entry/exit system. These systems become very complex and require careful planning by instructors and program coordinators. One such method has been adapted at Fox Valley Technical College.

The FVTC Flexible PEG System

Enrollment goes on regularly at the Fox Valley Technical College campuses. Because students proceed at different rates and graduate at different times, program openings occur regularly, and students are admitted at multiple entry points. Currently, new students may enter program courses every 3, 6, 9, 12, or 18 weeks. In developmental classes, they may enter daily. A streamlined registration system provides quick access

Flexible schedules meet the needs of students and faculty.

to course selections, and student records are kept on computer terminals located throughout the district, including at regional learning centers. Coordinators and counselors work with faculty and students to provide flexible schedules that meet the needs of both students and faculty.

The Perpetual Enrollment/Graduation System offers opportunities for employed adults to be slotted into regular occupational programs.

PEG differs from other open-entry systems in that enrollment points are predetermined and programs are blocked according to the demands of the curriculum. FVTC's system permits entry ranging from daily registration in some courses to as few as four times a year in others. There are 16 major entry points for most FVTC students, and courses in the various occupational programs are structured in multiples of three-week blocks. The staff has designed various entry points and has sequenced courses so that students who enter can complete in the normal time, unless they desire more time. In addition, provisions are made in most programs to allow students to complete courses and programs earlier if they can meet the competencies required for graduation.

While many schools claim to have similar multiple entry/exit systems, most have only a few courses or programs with this type of flexible delivery. Not so at Fox Valley Technical College! A study of the FVTC programs shows that multiple entry is available in all divisions of the college in a multitude of courses and programs, all sequenced in an orderly manner.

A flexible calendar has been designed in cooperation with the faculty to determine the primary entry points for programs. Some of these programs are available on a year-round basis, while others are offered in the traditional school year or in weekly intervals which are less than the 48-week year-round school. With this type of calendar, instruction at Fox Valley Technical College is available throughout the year except for four weeks when classes are not available. This shutdown includes a two-week break over the Christmas/New Year holiday, a week for spring break and another week during the summer months. Fox Valley Technical College calendar for 1987-88 is shown in Table 15.

To accommodate students who are enrolled in the PEG programs, the General Education faculty designed special courses to complement the occupational course work. These courses also provide enrollment alternatives so that students may complete required courses without loss of time. Such a system, therefore, requires joint programming and scheduling among faculty throughout the college. A time management computer program helps maintain faculty schedules in this complex environment.

PEG requires joint programming and scheduling throughout the college.

There are still a few programs at FVTC which are available on the traditional two-semester calendar basis. However, plans are being readied by college officials and faculty to convert them to the PEG concept. Students and staff generally agree that such a program, while beset with some problems in the early stages of

Table 15

FVTC Calendar for 1987-88

TYPE OF TERM	TERM NO.	START	END
18 Weeks	1	09/02/87	01/15/88
	2	01/18/88	05/27/88
12 Weeks	1	09/02/87	11/20/87
	2	11/23/87	02/26/88
	3	02/29/88	05/27/88
	4	06/06/88	08/31/88
9 Weeks	1	09/02/87	10/28/87
	2	11/02/87	01/15/88
	3	01/18/88	03/18/88
	4	03/21/88	05/27/88
	5	06/06/88	08/12/88
Summer Session	6	06/27/88	08/31/88
6 Weeks	1	09/02/87	10/09/87
	2	10/12/87	11/20/87
	3	11/23/87	01/15/88
	4	01/18/88	02/26/88
	5	02/29/88	04/06/88
	6	04/18/88	05/27/88
	7	06/06/88	07/22/88
	8	07/25/88	08/31/88
3 Weeks	1	09/02/87	09/18/87
	2	09/21/87	10/09/87
	3	10/12/87	10/28/87
	4	11/02/87	11/20/87
	5	11/23/87	12/11/87
	6	12/14/87	01/15/88
	7	01/18/88	02/05/88
	8	02/08/88	02/26/88
	9	02/29/88	03/18/88
	10	03/21/88	04/06/88
	11	04/18/88	05/06/88
	12	05/09/88	05/27/88
	13	06/06/88	06/24/88
	14	06/27/88	07/22/88
	15	07/25/88	08/12/88
	16	08/15/88	08/31/88

development, offers benefits far greater than the challenges it creates during implementation.

An Industrial Model

Some educators have called PEG the "systems approach" to instruction. They compare this type of application with strategies that have been eminently successful in the private sector in integrating and managing complex systems of manufacturing and product development. This "systems approach" had its origin in the development of military weapons, such as the Polaris nuclear-powered submarine missile system and the NIKE air defense missile network. Because training and instruction also involves the integration of several complex subsystems, educators have agreed that the techniques used in the development of industrial and defense systems can be applied to education.

PEG . . . the systems approach to instruction.

The PEG concept requires a variety of teacher contracts to accommodate program schedules. Twelve weeks on, four weeks off and three days per week year-round are just two examples.

The ultimate goal of such a flexible educational system is to achieve maximum internal operating efficiencies while having an effective learning system. The system

requires learning management in each department whereby staff plan, organize, direct, and control the resources available to achieve maximum efficiencies. The instructional manager (teacher) reaches these goals by using operational methods which are the most efficient and effective.

In training and education, the overall goals are not difficult to define; but the means of reaching them have proven to be extremely elusive. In the systems approach, instructional managers have the job of designing, developing, and validating instructional systems which enable the school to train more students better and faster and with fewer resources. Specifically, the goals of this type of instructional system are to:

- Train students more precisely for the duties they must perform on the job.
- Reduce the resources and number of instructors and support staff required to conduct the training.
- Shorten training time.
- Lower overall operating costs.

This systems approach, therefore, can be summarized as a process of managing and teaching using a set of organized procedures which will make possible the planning, development, and validation of instructional systems to educate students. Most important, though, is insuring that students are able to perform efficiently in skilled, technical, or semi-professional positions once they graduate.

Most important is insuring that students are able to perform efficiently once they graduate.

TRI-
PARK
TECHNICAL
RESEARCH
INNOVATION

Chapter 6
Economic Development

Chapter Overview

Strong economic development programs demand extraordinary cooperation with agencies and other schools of higher education. Economic development roles for technical schools demand quality and productivity models similar to those found in the private sector. These services to businesses provide employees with instruction and activities which may be unusual for higher education. These ventures are mutually beneficial because collaborative activities insure that the courses and programs are up to date and provide experiences for students and faculty which might otherwise be absent from the regular education setting.

The tremendous demand for retraining programs, new approaches, and ventures formerly uncommon to higher education are leading to the design of quick-start training, customized curricula, technical assistance, and other innovations in occupational education. The need is so critical that a quality conformance requirement in an occupational program is to have a defined school/industry program.

Chapter Concepts

1. The Role of Higher Education in Economic Development
2. Employer/School Relationships
3. Economic Development at FVTC
4. Fox Valley TRI-Park
5. Business and Industry Technology Center
6. Governance/Funding of TRI-Park

The Role of Higher Education in Economic Development

The emphasis toward greater linkage with business and industry is mushrooming.

Community technical colleges have moved rapidly into economic development activities. This new emphasis toward greater linkage with business and industry is mushrooming. Post-secondary educational institutions should have conformance requirements related to economic development. Collaboration with business and industry in economic development ventures is essential.

Economic development involves efforts to improve the productivity and profitability of business and to create new jobs and qualified workers to fill them. This implies that a region, as a whole, must focus on developing the key elements of capital, entrepreneurship, and a skilled work force. This task can best be accomplished through a synchronized effort of all parties who have interest in the economic development of the region. Occupational education has a key role in this partnership.

All training programs should include on-the-job training opportunities as a necessary part of the curriculum.

Pre-employment training has always been a major responsibility of post-secondary technical schools. However, changing technology and high equipment costs make it necessary for technical colleges to rely on business/industry cooperative training programs. This cooperative movement is a means of maintaining relevant curriculum while limiting the high costs of instructional equipment. In fact, all training programs today should include on-the-job training opportunities for students as a necessary part of the curriculum.

There must also be organized efforts by technical colleges to help business to expand and become more productive and to assist in attracting or developing new business. This means providing customized retraining, upgrading, and technical assistance at times, locations,

and in formats that best meet the needs of a specific employer. In this significant effort, the technical college becomes an active partner in job development and training. Therefore, the general goal of economic development programs is to:

- Assist employers in maintaining competitive productivity by providing well-trained graduates with the motivation and ability to produce.
- Help employers maximize human potential when employees complete instructional programs which enable them to work at or near their potential.
- Stabilize or expand employers economic well-being through cost effective and efficient educational programs.

Employer/School Relationships

Employers and educators need each other in today's technological age. There is an urgent need to train and retrain a work force which can adjust with each successive wave of technological change. Business, industry, government, organized labor, and educational institutions must form alliances which provide better coordination of regional resources and advance the teaching/learning environment of the schools.

There is an urgent need to train and retrain a work force which can adjust to technological change.

Relationships between technical colleges and business, industry, labor, and agriculture have a historical foundation. The use of advisory committees in program design, implementation, and evaluation has long insured curriculum relevancy and program quality. Continuous contacts with persons "in the field" have been the hallmark of quality vocational-technical programs.

Technical colleges, in assuming assertive roles in economic development, must focus on different ways to work with employers of graduates and workers who need retraining. In this new emphasis, technical college students, staff, and trustees engage in active relationships with business and industry, agriculture,

community-based organizations, labor unions, and local and state government agencies. This involvement is vital to the quality of occupational programs, especially as it relates to:

- Providing opportunities for students to receive relevant learning experiences in actual job settings.
- Establishing professional development activities for faculty through exposure to the latest equipment and newest techniques.
- Working with community and private industrial development activists in cooperative ventures related to relocation and expansion of business and industry within the region served by the school.

Economic Development at Fox Valley Technical College

Cooperative, futuristic thinking and planning are the keys to a sound, long-range economic base.

As part of the strategic planning process, Fox Valley Technical College designed an Economic Development Plan which includes a blueprint for the 1980s and beyond. Cooperative, futuristic thinking and planning with the business community continue to be the keys to developing a sound, long-range economic base for the entire Fox Valley region. To assist in creating an atmosphere for that to happen, FVTC, through its advisory committees, has initiated the following types of business/education linkages:

1. Design of a formal cooperative education (work experience) program with business and industry for each full-time program of the college
2. Construction of an applied demonstration and training center to assist business and industry with productivity and staff development
3. Design and implementation of incubator facilities as a vehicle for new businesses to emerge
4. Use of telecommunications (interactive television/computers) to link with district businesses through cable television and instructional television fixed service (FVTC TechNET)

5. Design and implementation of a Technical-Research-Innovation Park (TRI-Park)

The 1982 FVTC publication, "Guidelines to Economic Development," describes an organizational plan for enhancing economic development. An Economic Development Division coordinates the effort and serves as the liaison responsible for planning with divisional staffs, monitoring the delivery, and evaluating the effectiveness of the instruction or activity.

A primary benefit of this integrated approach is the strengthening of full-time programs. Existing areas of instruction may be explored and new areas of instruction introduced. A secondary benefit of this approach is the opportunity for individual staff member professional growth through participation in emerging and specialized training.

A primary benefit is the strengthing of programs.

Thanks to automated curriculum management, FVTC is able to respond quickly to requests for specialized courses of study. Using the computerized WisCom System, the curriculum materials can be easily customized for a specific industry. Retrieval is quick, with accessibility limited only to the availability of a computer terminal.

For example, when a training request comes in from an industry, FVTC determines if curriculum exists to fill the specific request or if new curriculum must be developed. Before automation, it took days to gather information on resources and calculate costs. Now with the curriculum data bank file on the computer, FVTC administrators know within hours what can be offered, developed, or adapted; how much it will cost; and when the school can begin the course. Industries avoid costly training programs of their own, and FVTC's role in the community is strengthened when training tailored to industry's needs is offered.

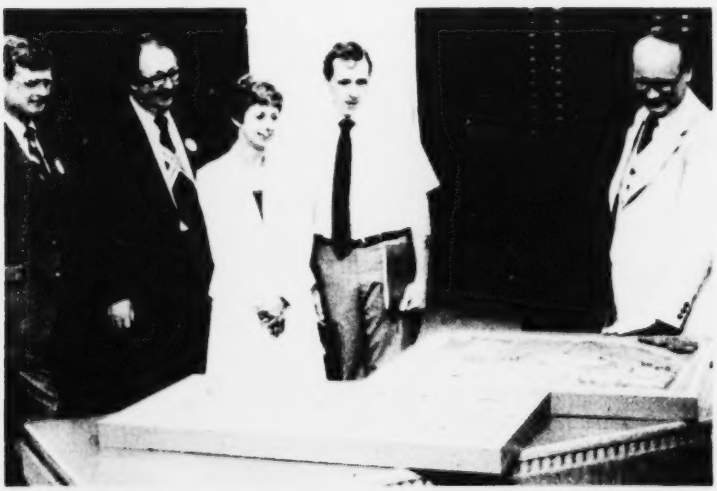
Fox Valley TRI-Park

Post-secondary technical education is in an era of rapidly changing technology with closer ties to the business community. These relationships are essential to technical education. They focus on economic development, satisfy the retraining needs of the community, and provide unique, creative, and essential opportunities for FVTC students and faculty.

It is essential that work experiences are available for students and faculty.

With rapidly changing technology and increased fiscal constraints, it is essential that real-life work experiences are available for students and faculty to obtain on-the-job instruction on up-to-date equipment which cannot always be provided in the college setting.

The Fox Valley Technical-Research-Innovation Park (TRI-Park) is a result of an active partnership in economic development with the community. The TRI-Park concept is based on the belief that an industrial park which has a defined cooperative arrangement with a comprehensive technical school will have a better



Fox Valley TRI-Park is an innovative example of cooperation between a technical college and business community.

chance to succeed than one that does not have such an arrangement. This joint venture involves the regional Chamber of Commerce, county government, area Private Industry Council, Job Service, area schools of higher education, other regional agencies, and business and industry.

The Fox Valley TRI-Park consists of a multi-use commercial real estate project of approximately 320 acres of land surrounding Fox Valley Technical College. The purpose of its development is not to create another typical industrial park; rather, the goal is to create a comprehensive business/education environment conducive to start-up businesses, while encouraging product research and fostering product development. Through location in TRI-Park, highly technical, service-oriented firms or emerging industries diversify the economic base of the region. TRI-Park provides an attractive, campus-like environment with a cooperative arrangement with FVTC.

. . . to create a comprehensive business/education environment.

In TRI-Park, students and faculty work on projects and in activities with persons actually employed in business and industry. While the TRI-Park concept places FVTC in the role of assisting agencies in the recruitment of new industries to the region, such involvement improves the school's programs. This environment is unique in the state of Wisconsin and the Midwest. In fact, it may be the first of its type in the country.

Because of its uniqueness, TRI-Park does not actively compete with private or public developments within the region. Rather, it seeks to attract businesses who would not otherwise consider expanding or relocating in the region.

TRI-Park evolved from the notion that the area needed an industrial park targeted to clientele different from that currently being served. From the beginning, the goal has been to create an environment for firms that

would benefit from a close relationship with a comprehensive technical college. According to the Fantus Company report,

> **A well-planned and tightly controlled industrial park offers a firm several advantages: a prepared site with the necessary zoning approvals in place; controls and standards to insure that land values are protected and that operations will be compatible with surrounding neighborhoods; and a road network designed to allow efficient movement of the goods.**
>
> **The shift in economic development to light manufacturing, research and development services, and office activity places a new emphasis on the attractiveness of the work environment.**[6]

The research firm feels that foreign firms are especially attracted to this type of prestigious park that includes restrictive covenants, lakes, green belts, wellness trails, architectural controls, and special relationship with the technical school and other schools of higher education.

Technical Park Tenants

TRI-Park is currently recruiting product research and development operations, highly technical and service-oriented firms, and light industries that have an interest in expanding or developing new businesses in a well-planned, tightly controlled, campus-like atmosphere. Businesses which locate in TRI-Park agree to tight regulatory agreements to insure a quality environment and guarantee educational planning with FVTC and other educational institutions.

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6 TRI-Park Development - Feasibility Report, Fantus Corporation, Chicago, Illinois, March 22, 1984.

The following types of industries are being recruited to locate in the TRI-Park:

Association or Agency Training Headquarters

One section of TRI-Park is designated for national or regional association or agency training headquarters. These training facilities will be used in two ways:

- To provide training and other services for the association or agency employees from the region or, at times, from throughout the country and the world.
- To provide specialized training for students who are attending Fox Valley Technical College and area workers enrolled in retraining programs.

In such a facility, modern specialized equipment will be donated by the cooperating association or agency. FVTC will provide several services such as maintenance, food, media, word processing, and data processing services. The agency's training director will have a special relationship with the school's faculty and may be employed by the college. This type of working relationship will have a positive effect on the learning experiences of students. FVTC faculty will use the training facilities and have access to new equipment for occupational training. In addition, there will be upgrading activities for instructors and opportunities for the use of media and other instructional resources donated by the association.

The D. J. Bordini Technological Innovation Center (Bordini Center), owned by Fox Valley Technical College and located in TRI-Park, houses an extensive Flexography laboratory which is being used as a training center for the vast flexographic industry. The primary instructor, employed by FVTC, teaches in the associate degree Flexography program and provides training to flexography workers from all over the world. The industry has responded by donating up-to-date equipment worth thousands of dollars to the center.

The hub of TRI-Park, the D. J. Bordini Technological Innovation Center, is the educational link for tenants.

Demonstration/Marketing Center

Another part of TRI-Park will be used to demonstrate and market equipment. New equipment will be moved into these facilities as it is released by the manufacturer for demonstration to business and industry; it will also be used for training purposes by FVTC. Faculty and students will be involved in the marketing demonstrations for business with actual learning activities being conducted while using the equipment. In that way, both the business and the college benefit.

The FVTC Computer Analysis Center (CAC), also located in the Bordini Center, is an example of this type of application. Computer vendors and manufacturers have donated expensive computer hardware and software systems for use in demonstrating and marketing the products. Students use the equipment and receive assistance from staff in the use of the computers and extensive software which are available. Through these experiences, they can determine which

computers and software to purchase for their unique application.

At the Computer Analysis Center, FVTC staff assist business people in selecting computer equipment and software.

Research and Development

In cooperation with state and private universities, TRI-Park is incorporating a research and development component. In this setting, research on new products and services for area business and industry will occur.

In 1986, an extensive survey of area businesses was conducted to determine the need for research- and engineering-related services and instruction in the Fox Valley. The survey substantiated the need for a strong liaison between the University of Wisconsin (UW) System and the region served by Fox Valley Technical College. Working with the University Industry Research Department (UIR), a formal liaison may be established in TRI-Park. The goal is to establish an outpost of the University in the Fox Valley region. In addition, a private university, the Milwaukee School of Engineering, is considering locating in the Bordini Center--a first

step in establishing a center for engineering instruction in TRI-Park.

The research capability will then serve many businesses and industries from TRI-Park and in other areas of the district; engineers, technicians, and interns from the university and student technicians from the technical school will be able to work together on various cooperative projects. The research and development (R&D) concept will provide rare opportunities for instructors and students to interact with engineers and technicians on projects related to institutional programs.

Incubators for Small Business and Industry

Incubators signal a new approach to economic development, one which emphasizes the importance of cooperation rather than raw competition in the building of a better business climate. Across the country, incubators are being started by universities, community colleges, local governments, community development corporations, and private sector corporations, such as the Control Data Corporation.

New and expanding young firms face serious barriers.

Despite the growing importance of entrepreneurship in our economy, new and expanding young firms face serious barriers to obtaining adequate and affordable space, organizing and managing a business, securing financing, and finding qualified employees. Although most young manufacturing firms do not need a large space to operate, suitable small spaces are usually scarce and more expensive than larger building spaces. Finding skilled management and employees can be difficult for a business providing a new product and service.

The industrial incubator reduces these obstacles; small businesses can get started with inexpensive rent and/or flexible work space. Incubators serve a group of small

business enterprises, each of which leases space from the owner for a specific period. On completion of the lease, the new business obtains its own venture capital and relocates to another area, preferably to a community or private industrial development park. The facilities also offer management and training assistance as well as business services and financial help to their tenant firms. Incubators benefit entrepreneurs by:

- Creating a synergy among tenant firms--tenants often share equipment and give each other business.
- Eliminating business maintenance responsibilities.
- Providing an environment where they are not alone, thereby reducing the anxiety of starting a new business.
- Increasing their visibility.

While location of an incubator is not included in the immediate plans for Fox Valley TRI-Park, such a facility can be located anywhere in the region and the school can assist in numerous ways. The technical college becomes involved with incubators by offering services and instruction to entrepreneurs. When FVTC students assist entrepreneurs, they gain valuable work experiences in the process. Besides helping through faculty and staff involvement, the school also assists in establishing service areas in the incubator.

When students assist entrepreneurs, they gain valuable work experience.

To promote the incubator concept, Fox Valley Technical College has established an incubator center in the Bordini Center. Through a formal agreement with the school, a fledging company can temporarily locate there in accordance with specific covenants. The goal is to assist entrepreneurs to get started in the incubator center and then help them relocate to TRI-Park or another industrial development site in the region.

New Technology Firms

New technology firms will comprise most of the tenants that locate in TRI-Park. Restrictive covenants insure that the firms have a relationship to one or more programs at the technical school and that a written educational plan is prepared and updated yearly. As of this writing, two firms have committed to locate in TRI-Park and two others are in the process of purchasing property. These businesses have strong links to Fox Valley Technical College.

To begin with, these businesses hire many FVTC graduates. In addition, they have agreed to provide work stations for FVTC students and to serve on various advisory committees.

Business leaders create a valuable influence on Fox Valley Technical College programs by their presence and participation in the TRI-Park environment.

One of these firms, Valley Systems, Inc., was the first business to construct a facility in the Fox Valley TRI-Park. Over 100 employees are working in a 30,000 sq. ft. building in jobs related to banking, accounting, and data processing. Within six months of the time the

business occupied its new facilities, two FVTC graduates were hired and two students began receiving on-the-job training in the company. The president of Valley Systems, Ken Scott, is a member of the TRI-Park Board of Directors.

The second company to locate in TRI-Park will be Action Data, Inc., a company that develops and markets computer software used in financial services businesses. FVTC students and staff will receive considerable benefits from Action Data, Inc., through their joint affiliation with TRI-Park.

The supportive nature of education is an asset to the recruitment of firms to the Park. Fox Valley Technical College support services are available to all TRI-Park owners, as well as to businesses of the entire region, as follows:

- **Quick-Start Instructional Programs** - Customized instruction and services which relate directly to the specific firm are provided. This includes the design of course work and the construction of media packages and learning kits which are correlated with the skills required for employees. Instruction is provided to new employees for the start of the business.
- **Technical Assistance and Consulting Services** - An array of these services is available to meet the individual needs of the firms. These technical assistance services are offered by area universities and the technical school to assist firms depending on their individual needs.
- **Employee Development and Training Services** - Assistance is provided in the design and implementation of an employee development plan for each firm in the TRI-Park. Such a plan includes customized training and other instructional courses designed to meet the special needs of the company.
- **Career Development/Placement Services** - A comprehensive career development program is available, including a computerized self-development program. Placement services are available, including computerized job listings.

- **Library and Information Services** - In addition to books and technical journals, computerized, statistical packages are available, as well as access to national data bases. Research networks with area universities are being established to complement an extensive technical library.
- **Employee Testing Services** - Testing services are available for businesses in TRI-Park. In addition to the typical test instruments, customized test packages are developed on request.
- **Cooperative Work Experience** - Advanced technical school students are available for cooperative work agreements. Besides increasing the relevance of training programs for students, skilled workers are available for nearby firms.

Business and Industry Technology Center

The hub of TRI-Park is an applied technology complex, the D. J. Bordini Technological Innovation Center. In this unique setting, entrepreneurs receive assistance in developing their ideas and concepts into a viable product. Established firms receive technical support and assistance. The Business and Industry Technology Center is designed to accommodate these services on a flexible schedule for TRI-Park tenants and community participants. It is the formal liaison to the technical school's vast network of programs and services. A communications network assists with the coordination of community resources and provides direct assistance as needed.

The Center includes the following functional areas to assist owners in TRI-Park and others from the region who want to take advantage of the services available:

- **Conference Center and Training Areas**: Training rooms separated by expanding walls offer maximum flexibility. Large outside doors allow easy access for equipment demonstrations. The center's highly aesthetic design and decor enhance community business activities and conferences. Live broadcast from

the center and satellite down-link capabilities are featured using state-of-the-art media controls and equipment.

This center is the focal point for the entire facility, an area where the actual service to the owners/tenants of TRI-Park and regional businesses takes place. Large seminars, small group meetings, custom training sessions, satellite conferences, and live broadcast sessions can all take place through this highly flexible center. This is FVTC's "theater" for presenting state-of-the-art technology to business and industry.

- **Computer Analysis Center**: The Computer Analysis Center provides research facilities for the public and FVTC staff. For the public, the CAC provides hands-on experience with various computers and associated software in an environment free from sales pressure. This allows clients to determine if a certain computer and/or software capabilities meet their needs. In addition to handling initial inquiries, CAC members assist clients in getting started using the hardware and software. In-depth analysis requiring substantial staff involvement is contracted and paid for by the client.

- **Networking Resource Center (Technical Assistance)**: This center includes agency/educational resource linkage information to meet the educational covenants of TRI-Park. It serves as a center for research and development for the owners/tenants of TRI-Park and industries of the region. Computer technology will provide access to the research and other capabilities of UW-Madison, UW-Oshkosh, UW Green Bay, UW Center-Fox Valley, the Institute of Paper Chemistry, Lawrence University, the Milwaukee School of Engineering, and other educational institutions.

  This center has offices for economic development staff who serve the owners/tenants of TRI-Park and Outagamie County area business and industry. Staff who serve as Technical Training Consultants (TTC's) have office space in the center as well as professional assistants and clerical staff. Additional office space is provided for linkage agencies.

  This segment of the facility acts as the main coordination hub for activities occurring in and through the facility to owners/tenants of TRI-Park.

- **Technical Resource Library**: The Technical Resource Library gathers specific technical resour-

ces for area business personnel, inventors, entrepreneurs, apprentices, and journeymen. Use of the library resources plays a role in stabilizing businesses by increasing worker effectiveness and productivity. Technical Resource Library staff also research information for related area businesses in response to specific problems or questions. The Technical Resource Library is the focal point for dialogue on the improvement of processes and techniques of operation for each participating association and/or business.

While traditional materials, i.e., books, magazines, and technical journals are available, computerized resource network accessibility ensures the latest, up-to-the-minute information.

- **Technology Demonstration Center:** The Technology Demonstration Center is capable of hosting new technology equipment, related demonstrations, and short-term training activities. Its design and construction allows maximum flexibility for use by a variety of organizations requiring a location and environment suitable to conduct equipment-related group seminar/demonstration activities. The center serves as a focal point for a wide variety of "state-of-the-art" technology and related seminar activity, and is a significant link in generating collaborative activities between area business and industry. Virtually any equipment manufacturer or sales organization will find this type of facility a valuable asset.

- **Communications Resource Laboratory**: The potential for linkage of Fox River Valley business, industry, and educational communities and the rest of the world is available in the Communications Resource Laboratory. The design includes provisions for teleconferencing and alternative professional development systems.

  The Communications Resource Laboratory adds a new dimension to employers by providing a source of satellite up-link transmission and down-link to Television Receive Only (TVRO) sites now committed for installation in each VTAE District through state incentive funding. FVTC currently has television and audio production facilities and equipment necessary to provide a substantial input to a teleconferencing and educational network.

- **Concepts Development Center**: Inventors and entrepreneurs have opportunities to do basic re-

search on potential products in the Concepts Development Center. Off-site testing of new products or equipment is done by student interns, instructors, and/or business personnel.

Security/confidentiality is an important factor in the design of this lab.

Engineers, technicians, and interns from higher education institutions, including student technicians from Fox Valley Technical College, will work together in this research and development setting. A particular focus will be on productivity and efficiency to enhance the local economy.

- **Quality and Productivity Center**: The fundamental concepts of quality improvement are the same for manufacturing, service, education, or government. Solving the problems of quality and productivity will require a massive training effort. This has led to the establishment of the Center for Quality/Productivity Improvement. The Center is an organized effort to assist local business and industry and nonprofit organizations to improve quality and productivity.
- **Flexography Laboratory/Center**: Through facilities designed for flexographic printing and packaging, the Flexography Center provides Fox River Valley converting and printing industries with opportunities to do trial runs, research processes, and train and retrain employees. Seminars and classes have been tailored to flexography industry needs. The industry's continuing need for expanded training and services in the area of research and development has been identified.

  The design of the facility creates an environment for customized training and individual research and development projects. These activities represent a cooperative effort between FVTC students and staff and personnel in the flexography industry.

Governance and Funding of the TRI-Park

The Fox Valley TRI-Park is a cooperative venture of the school, the Chamber of Commerce, Outagamie County, and other area agencies. Land for TRI-Park is partially owned by the school district and the county. There are three parcels. Two parcels totaling 260 acres are

owned by the county. The third 60-acre parcel is owned by Fox Valley Technical College.

The Fox Valley TRI-Park received solid support from leaders in government, business, and education.

A nonprofit organization has been developed to market and manage the TRI-Park. This organization operates with a strict set of covenants which clearly define operational guidelines, architectural restrictions, and cooperative educational programs. The majority control on the Executive Board lies with the Fox Valley Technical College, the Chamber, and the county. Other TRI-Park property owners also have membership in the corporation.

Funding for the development of TRI-Park came from five major sources.

1. The County Board donated land for TRI-Park and bonded for funds to be used for development of the property. As parcels are sold, the funds are returned to the county. The county assisted in the construction of the Bordini Center by providing funds for the facility infrastructure. It also gave FVTC the 5.9 acres of TRI-Park property for the Center.

2. The Economic Development Administration (EDA) provided a federal grant of $770,000 for the construction of the Bordini Center.
3. The Wisconsin Board of Vocational, Technical and Adult Education (WBVTAE) provided an initial grant of $20,000 to assist in the research and design of the plan for TRI-Park. Further, the WBVTAE contributed $175,000 to assist in the construction of the Bordini Center.
4. Fox Valley Technical College provided $500,000 of district funds for the construction of the Technology Building. An additional $800,000 provided high technology equipment for the laboratories in the new complex. FVTC will also make available 60 acres of its property for development into plots to be sold to firms and/or agencies which have a special link to the college.
5. The remaining sources of funding include private donations from business and industry and from individuals in the communities. Instructional equipment donations will be used in the laboratories of the technology facility. Funds from property sales to TRI-Park owners will also be used to further develop and market TRI-Park.

Chapter 7
Use of Technology in Education

Chapter Overview

Effectively merging instructional, administrative, and office information systems enhances the modern technical college. Having electronic access to these school functions is consistent with the private sector movement toward integrating computers into vast networks, while maintaining the individuality of the generic terminal or microcomputer. This chapter describes such a networking system which has emerged at Fox Valley Technical College. A carefully planned information system enables occupational students to progress toward program goals at their own pace.

Chapter Concepts

1. Computers in the Instructional Process
2. Computer-Based Education
3. Student Information and Advisement System
4. Automated Office System
5. Professional Office System

Computers in the Instructional Process

It is not unusual today for college students to walk into a school that is environmentally controlled by a computer, register for courses on a computer terminal, use a terminal or a microcomputer in classroom work, then buy supplies whose inventory is controlled by the computer. An occupational education system that uses competency-based instruction also relies on an effective automated information system. This system allows students to enroll continuously in a multiple entry/multiple exit system, operated year-round, and permits students to proceed through instruction at a pace consistent with their competence and needs. A carefully planned computer system enables the college to meet conformance requirements established by staff to operate a perpetual enrollment/graduation system.

Many schools throughout the country use computers in administration and instruction. However, there are very few schools which have effectively merged instructional, administrative, and office computing systems together. Fox Valley Technical College has. At FVTC it is possible for the user of a single terminal to achieve electronic access to any function of instruction, administration, or office computing. There are more than 750 computer terminals and personal computers linked in this unique network of technology.

In the early 1970s, FVTC decided to integrate the computer into its daily operation. All employees of Fox Valley Technical College were involved in intensive training to become skilled in computer technology. As a result, the computer has so permeated life at the technical school that managers, secretaries, instructors, and even board members are deeply involved in the information revolution of the 1980s.

Students also use the computer on a continual basis, and the school's staff, faculty, and administration use the computer every day. The accounting manager uses it for budget modeling; food service workers use it to maintain inventories of perishable products; and the chief executive officer of the school uses it to communicate electronically with his staff. Administrators exchange calendar information and schedule meetings, and office workers create and manage text requirements, all using the same system. The nine board members have computers in their homes which are linked with the vast electronic network. Board agendas, minutes, and other information and data are sent quickly to computer printers linked to the personal computers.

Computer-Based Education

Several computer-based education (CBE) resource laboratories are found throughout the sprawling main campus in Appleton. Also, computer-based education and other computer applications are found in the satellite campus at Oshkosh and at regional centers and high schools throughout the five-county area served by the district. Many FVTC employees have home computers linked to the school so that communications and other applications of the computer can be used even during off-duty hours.

Computer-assisted instruction (CAI) allows students to learn at their own speed, drill themselves, and take exams when they feel ready, even if the time required for proficiency is shorter or longer than designated in school schedules. At Fox Valley Technical College there are more than 150 CAI modules available for faculty and students through computer terminals. Most aim at the drill and testing function, which frees instructors from much of the routine work normally encountered.

In this technological environment, the student might reserve a computer station, then sign on using his/her identification number, and begin to respond to drill questions on the program assigned by an instructor. The significance of this kind of situation is that the school is channeling information previously transmitted by the instructor into a computer-based education system.

For example, in the Food Service Department, 25 tests in computer-based format enable the department staff to work with 150 students during each semester. Without the computer system, fewer students would be served. In the Communication Skills Department, students receive English grammar instruction at computer stations, and other computer applications such as introductory word processing are available.

Local research has shown that many students prefer to work at the terminals for these repetitive drills. Providing this alternative has led to fewer dropouts in Communication Skills. Thirty-one Communication Skills computer modules are used to teach grammatical concepts and monitor student progress through the prescribed sequence. At any time, the student can repeat segments, obtain a performance report, or repeat questions; and the instructor can call up the students' records to check their progress.

The use of the computer as a tool in the Communication Skills Department is only one example of leadership shown by Fox Valley Technical College in computer courseware development. There are also computer-assisted instruction (CAI) and computer-managed instruction (CMI) modules in use throughout the other departments of the school. Examples include: accounting, computer science, criminal justice, fashion merchandising, fire science, mathematics, metal fabrication, nursing, pulp and paper technology, real

estate, information systems technology, sociology, fluid power, electronics, truck driving, and graphic arts.

In addition to the computer-assisted instructional modules, there are hundreds of unique ways that FVTC faculty members have used microcomputers in the instructional process. For example, the school is actively using robots in programs covering electromechanical, machine tool, fluid power maintenance, and welding concepts. Computer-integrated cells are used to automate processes for training skilled technicians, engineers, and technical educators in manufacturing systems design and operation. Computer numerical control programming and maintenance activities occur daily at Fox Valley Technical College.

Learning the interaction of components in an automated manufacturing environment is a vital part of preparing for many occupations today.

In the Automated Manufacturing Systems Associate Degree program, instructors and students use an automatic robot transfer line to move parts from one workstation to another. An automated materials handling system helps students learn the hardware and software processes of programming and the intricacies

of interfacing automated equipment robots within the manufacturing system.

In the Graphics Department, the integration of text and graphics for document preparations is offered on an IBM printer using associated software and Automated Office System (AOS). This facility is being used for graphic arts instruction and by the media design service staff, the word processing center staff, and the public information office staff. Graphic arts teachers have developed complex microcomputer software packages for student training in printing and publishing courses.

Translating the basic concepts of graphic representation to automated drafting techniques is an essential part of harnessing computer tools for gains in human productivity.

In the Mechanical Design Department, CADAM (Computer Aided Design and Manufacturing) is offered to the students. Following intensive training, instructors are successfully using the IBM (Lockheed) system to maximize design and manufacturing processes. In addition, micro-based AutoCAD software packages are used in the drafting/design courses.

Instructors and staff at Fox Valley Technical College are convinced that this technological revolution is as much a part of education as it is a stimulus to business, industry, and agriculture. They believe that the college will face increasingly complex challenges associated with this tremendous technological age. As a school of higher education which mandates that students and staff embrace new information systems and work creatively with computers, FVTC is fulfilling its commitment to prepare students for productive roles in the technological future.

Technological revolution is as much a part of education as it is a stimulus to business, industry, and agriculture.

Institution and industry educators have participated in workshops and special consulting sessions offered by Fox Valley Technical College covering the techniques of developing courseware in this instructional form, and some of the courseware developed at Fox Valley Technical College is being marketed throughout the world by the IBM Corporation.

Student Information and Advisement System

At FVTC, a complex information and advisement system provides computer on-line processing of information about students, classes, courses, and instructors, and permits a unique approach in developing class schedules. Using the system's resources, the staff can register, admit, advise, modify programs, prepare transcripts and class rosters, post grades, and process fees and refunds.

The student advisement feature is a significant benefit to the College. The computer tracks students and provides information to determine if they are enrolled in studies that fit their capabilities. As a result, students are guided toward studies best suited to their needs.

A typical scenario would find a counselor at a terminal "calling up" student records to identify how courses

completed for one program might be applied to a different program. The computer calculates the results of an anticipated program transfer, and after the student and counselor have an opportunity to discuss the data that appears on the screen, the computer produces a printed copy for the student to keep. The system not only helps to prevent dissatisfied or discouraged students from dropping out, but it makes educational programs more meaningful.

Students at FVTC may register for classes at six campuses and centers located over a five-county area.

But even before students enroll at Fox Valley Technical College, the computer assists students and staff members in career development and information services. Students in high schools or at one of FVTC's centers can examine information about schools of higher education, including the occupational programs at FVTC, and determine whether they want more information about any of the offerings. The computer gives information about desirable high school courses and prerequisites pertaining to a program, as well as other information about persons who have completed a

program and now are successfully employed in the occupation.

Automated Office System

In 1982, the Word Processing Center accepted an invitation from IBM to serve in a pilot program testing software that merges the functions of the mainframe computer and of word processing to automate office procedures. The IBM Document Composition Facility (DCF) software package was enthusiastically accepted, and the FVTC Automated Office System (AOS) was born. AOS can generate all documents (correspondence, class handouts and tests, reports, and curricula) and print them on laser printers connected to the mainframe.

In an effort to move toward the concept of an electronic, "paperless office," FVTC has developed three types of Automated Office System training. First, board members, administrators, and management personnel received twelve hours of computer familiarization focusing on terminal operation, an overview of the Automated Office System, and FVTC standards for the system.

Second, technicians and support staff received 40 hours of training in AOS mechanics over a six-week period. New support staff employees receive this 40-hour training, too, and periodic refresher sessions are held for personnel already trained on the system. Third, concept/curriculum training was given to all instructors, administrators, and management personnel. Instructors received the regular concept training and were offered an optional 20 hours of additional training in the use of data processing to prepare curriculum and learning materials.

The Automated Office System extends into curriculum processing where WisCom (Wisconsin Competency-Based Occupational Curriculum Data System), an FVTC-developed application, is used for the design and dissemination of course offerings. Curriculum data is keyed in with outlines, tasks, objectives, student learning materials, and evaluations arranged according to a standardized organizational format and indexing system. All standard formats are available on the College's Automated Office System.

Managers use mainframe graphics to visualize information for presentations to such groups as advisory committees and the district board. In addition, personal computer software packages, i.e., Storyboard, Ventura and other desktop publishing systems, enable users to develop presentations. Mainframe spreadsheet applications also provide managers with a facility to simulate models for budget development and data analysis.

Advanced desktop publishing systems enable staff to prepare camera ready materials.

Professional Office System (PROFS)

IBM's Professional Office System (PROFS) expands Fox Valley Technical College's Automated Office System with a facility for text preparation and printing, electronic communication distribution, central filing/retrieval services, and personnel services--updating calendars, scheduling meetings, setting reminders, furnishing decision support access, and facilitating personal computation. It can assist in scheduling meetings by reviewing schedules and coordinating conference rooms and audiovisual equipment. Users can check a personal calendar for any day or month and then add, cancel, or move appointments, thus avoiding time-consuming telephone calls to schedule convenient meeting times.

The "proofreading" feature will check the spelling alone or in context, check the phrasing within a sentence, and/or check the reading comprehension level so the author can tailor the message to the audience. All FVTC staff members--the board, administration, management, faculty, and support staff--have been trained to use PROFS.

Chapter 8
Partnerships with Other Educators

Chapter Overview

Articulation cannot occur in instructional systems which have individual components going in independent directions. Central to any partnership process is the guidance and counseling of students who should be directed toward understanding the purpose, policies, and requirements of the institutions to assess their own abilities and interests toward career goals. Therefore, working arrangements for vertical articulation between the educational institutions should also be communicated to counselors, admissions officers, and other educators who may not be involved in the articulation project.

The process of curriculum articulation includes an agreement that students will be admitted into advanced technical programs at levels commensurate with the competencies obtained. This means students should be able to proceed toward the attainment of their career goals without duplicating previously acquired skills or competencies. This appraisal of the students' abilities, needs, and interests must be individually oriented with minimum duplication of previous appraisal efforts.

For the same reasons outlined in arrangements for articulation with secondary schools, technical colleges should also work to establish similar agreements with four-year universities in the region. In this era of lifelong learning, all persons will be returning for additional education. This movement of students between educational levels demands agreements between schools to avoid unnecessary duplication and to facilitate acceptance of credits from other levels.

Chapter Concepts

1. Articulation: Definition and Rationale
2. Partnerships with High Schools
3. An Articulation Model
4. Post-Secondary Partnership Programs

Articulation: Definition and Rationale

More and more these days, educators from secondary schools and higher education levels are getting together to examine their common goals and objectives and to discuss ways to streamline the progression of students through their education to a place in the world of work.

Establishing meaningful partnerships with other levels of education in the region is called "articulation." Articulation is a planned process for communications, curriculum development, program coordination, and student appraisal which facilitates the transition of students from secondary schools to technical colleges and from the technical colleges to four-year universities. A formal plan for articulation among educators from other institutions is a conformance requirement of the Quality First process in the technical college.

There are some successful models of articulation between high schools and post-secondary technical schools. Most require initial communication between the decision makers of the schools, including school superintendents and administrators. In some cases, school board members are involved in the early meetings. These initial sessions establish the framework from which the staff can plan together in cooperative ventures. They set the stage for further activities under the articulation umbrella.

The primary focus of articulation should be the individual needs of the students.

An increasing number of two-year graduates are going on to obtain four-year degrees. The primary focus of any form of articulation should be based on the individual needs of the students. This implies that the best kind of articulation is joint development and sharing of curriculum among the faculties of the schools. Developing a plan to foster the transfer of competen-

cies and courses taught at the various levels of education allows students to proceed through occupational programs and into four-year curricula at a rate commensurate with their abilities without major duplication of course work. To provide this kind of articulation, curriculum must be organized in ways that foster minimum course content duplication for the student as he/she proceeds through the various competency levels. This kind of organization offers well-coordinated occupational programs for students and definite career paths toward specific occupations that require 4-year degrees. In this process, it is also desirable that the schools cooperate in sharing equipment and facilities as well as occupational instructors.

Recognized channels for communications among these educational levels for faculty, students, administrators, admissions officers, and counselors should be established and actively maintained to provide a means of exchange of information and materials to the transition of students among the systems. These kinds of communications require continual sessions among staff members from the three levels.

Partnerships with High Schools

What is the reason for greater articulation efforts? To begin with, an increasing number of young people are entering occupational training after graduating from high school. At the same time, some complex and comprehensive vocational programs have been developed in the high schools. This, coupled with evolving economic and social changes, points to an era of lifetime learning in which education will occupy a substantial portion of each person's life. While today's young people are physically, socially, and intellectually more advanced than their parents were at the same age, the educational system has generally not fully adjusted to these advancements. In addition, many

Lifetime learning . . . education will occupy a substantial portion of each person's life.

educators agree that overlapping curricula in secondary and post-secondary schools waste time and fail to challenge students. Finally, it is often very difficult to distinguish between the objectives and methods of instruction used in the two levels of institutions. While repetition is desirable in learning systems, the level of overlap in common practice needs to be investigated. These factors and the continuous need for flexibility in instruction provide sufficient rationale for formal programs of cooperation. They form the basis for the conformance requirement described above.

There is one last, compelling case for an increase in articulation. The rising cost of education and increasing taxpayer concern is creating a nationwide tendency to view occupational education in a single budgetary package, while pressing for better coordination of its diverse elements. These issues of fiscal concerns and responsibility cannot be ignored.

An Articulation Model

The average person will change job responsibilities at least five times during a lifetime and change employers at least three times.

Occupational education should be viewed as a perpetual process which begins early in a person's life and continues when the person is employed. The average person will change job responsibilities at least five times during a lifetime and change employers at least three times. This articulation model lists sequential activities organized into four major categories. The sequence need not be followed exactly, because obtaining commitment by persons involved may require some compromise and minor deviation from the specifics of the model; there are, however, several important elements which are absolutely critical to successful curriculum articulation:

1. Effective planning
2. Competency-based curriculum design
3. Flexibility

4. Philosophical recognition
5. Planned in-service for participants

These elements are grouped into four stages in this suggested model of articulation.

Stage 1: Planning

The planning group becomes the steering committee whose first job is to identify local needs, priorities, and preferences regarding an articulated curriculum. As they analyze and interpret information, they formulate general objectives, establish tentative priorities, and develop a plan of action.

The faculties must be involved in the planning stage if any appreciable impact on actual school practices is desired. There should be careful planning of the program and operational components of the local models before any piloting begins. It is better to take more time in planning than to try to implement too soon.

It is better to take more time in planning than to try to implement too soon.

Competency-based instruction must be accepted as the curriculum approach to be used in articulated instruction. This means that there is agreement among the instructors that curriculum should be based on the careful detailing and teaching of the tasks actually performed on the job. Post-secondary schools should develop flexible programs which will automatically grant advanced standing with advanced placement for students with past learning experiences. Unless there is acceptance of and credit for prior learning, the articulation arrangements between the schools is a waste of time.

During all articulation processes, there should be no attempts to change the overall philosophy, objectives, instructional methodology, or management structure of the cooperating schools. Rather, there should be

mutual agreement to preserve those local features. The only requirement should be a commitment to communicate continuously with the educators at the different levels, coupled with a desire to strive toward fulfillment of the articulation priorities and goals.

It is essential to plan ongoing in-service activities.

It is essential to plan ongoing in-service activities. This allows persons to develop new skills in the teaching/learning process while becoming better acquainted with their colleagues in education. New teachers who are hired must also participate in orientation and in-service training to insure continuity.

Stage 2: Development

During the development phase of this model, the instructors who are participating in the curriculum articulation project receive in-service about competency-based instruction and the potential use of curriculum materials which are available from various sources. However, because these materials are often developed in different parts of the country and their local application may cause the need for change, an ERIC search is recommended to uncover previously conducted task surveys and job analyses. Following this research activity, project participants prepare a local strategy for determining the job tasks.

Because of the time needed to conduct task surveys among workers, several approaches to determining tasks may be used. One such method is DACUM (Designing a Curriculum), a system which was developed in Canada and now is being used in many parts of this country. Instead of instructional staff going to the industry to survey workers, six persons (three employees and three supervisors) are called in for intensive group interviews. They determine the major tasks and competencies which should be included in the instruction.

Another quick way to determine the tasks to be taught involves reviews by advisory committee members, but this is the least reliable of the approaches. The more information received from the actual people who perform or supervise the job tasks, the more relevant the information will be in a competency-based instructional program.

The more information received from people who perform or supervise the job tasks, the more relevant the information will be in a competency-based instructional program.

Once the tasks have been selected, the faculty write performance objectives that consider standards of performance and conditions, and construct the criterion tests to measure student performance based on the objectives and job tasks which were identified.

Student performance is measured based on the performance of job tasks according to identified objectives.

An essential part of the development stage is the design of materials and selection of a management system to insure that accurate records are kept as students progress through programs from one level of education to another. There should be a check-off system for instructors to use when granting credits, along with some kind of storage and retrieval system to keep track of competencies which have already been

learned. Then when agreements for awarding credits are reached, the arrangements for granting advanced standing and advanced placement should be made.

Stage 3: Implementation

Once instructional materials have been developed and the management system is in place, the implementation stage begins. During this phase, project instructors field test the learning modules which, when proven to be successful, go to the instructors at the different levels.

It is essential that post-secondary schools have flexible transfer programs.

To best accommodate advanced standing and advanced placement of students, it is essential that post-secondary schools have flexible transfer programs. A multiple entry/multiple exit system with the elements of advanced standing, self-paced learning, and flexible scheduling will enhance the success potential of the school systems pursuing these kinds of partnership activities.

Stage 4: Evaluation

The final stage of the articulation process includes selecting evaluation systems and analyzing the effectiveness of the articulation project. Advisory committee members should be involved in this phase to insure that the process continually improves; they need to ask the following questions regarding the effectiveness of the partnership model:

- Has the model served the needs of the project staff in providing a systematic guideline for the total project?
- Should some elements of the model be modified to better meet the existing needs?
- Are students able to progress smoothly from one level of education to another without duplication of instruction and other activities?

Along with evaluation of the project as a whole and as in any competency-based curriculum, the validation of task competencies and objectives is essential. In addition, the learning modules should be reviewed by the participants and revised after follow-up studies are conducted.

Validation of task competencies and objectives is essential.

The structured articulation plan explained in this model is workable if there is close cooperation among the faculties from both levels. It assumes that students will be attending their classes in their respective schools following the curriculum for their course of study.

Dual Credit

Another effective approach to articulation with high schools which appears to have even greater promise is a program called STAC (Secondary/Technical Advanced Credit). In this dual credit program, students receive both secondary and technical school credit for the same course. The curriculum is approved by the technical college faculty, and the course is taught mainly at the high school by the secondary school teacher who is certified by the technical school to teach it. To

Students can receive credit for courses taken prior to attending FVTC.

further familiarize the high school students with post-secondary education, a portion of the course is also taught at the technical college; students who successfully complete the course receive credit before attending the technical school.

Post-Secondary Partnership Programs

Most important is assisting students in their transition between schools.

In addition to fostering partnership programs with secondary schools, cooperative arrangements with other two-year schools and the private and public four-year universities in the region are desirable. While there are many reasons to promote these cooperative activities, the most important is to assist students in their transition between the schools.

Most educators have long recognized the importance of facilitating transfer of credits for students moving from one institution to another in pursuit of their educational goals. Since an increasing number of technical school graduates desire to complete baccalaureate degrees and because some university students decide to transfer to a technical college, there should be continuing discussion on this topic. A written plan to establish transfer arrangements and to improve the agreements, guidelines, and procedures that govern transfer should be developed as an expression of mutual respect and cooperation between schools of higher education.

To accomplish this, faculty and administrative staff from both levels need to understand each other's curricula and program goals. One way to do this is to prepare course matrixes which show how each course in the college curricula relates to the various four-year programs and which courses could transfer between the schools.

Most two-year technical college graduates receive an associate degree in Applied Science. While this type of degree is designed to lead the individual directly to employment in a specific career, some baccalaureate degree granting schools have developed upper division programs to recognize this degree and accept those credits for transfer. This trend is encouraged since educational programs can no longer be considered terminal. The necessity for lifelong learning in response to the knowledge explosion urges students to expect several career changes during their lifetimes. Therefore, eventual work toward a baccalaureate degree might be anticipated for all associate degree graduates, including those who choose a career immediately after graduation.

No educational program can be considered terminal.

Obvious advantages of such curriculum articulation include avoiding unnecessary duplication, encouraging earlier goal orientation, and providing advanced placement. The growing use of competencies as the basis for instruction and learning should make comparisons much easier than just using course titles and catalog descriptions. The 2+2 "tech prep" program being advocated by the American Association of Community and Junior Colleges (AACJC) is a useful model.

Chapter 9
The Quality First Instructor

Chapter Overview

This chapter describes the Quality First instructor in the modern technical college. It reviews some major responsibilities of teachers beyond actual teaching.

Chapter Concepts

1. Definition of a Quality First Instructor
2. Roles Within the Organization
   a. Planning and Curriculum Development
   b. Delivery of Instruction
   c. Student Advising and Counseling
   d. Performing Department Functions
3. Quality Instructor Education (QIE)

Definition of a Quality First Instructor

Teachers remain at the heart of any educational program.

Despite increased use of technology, such as computers and educational television, teachers remain at the heart of any educational program; and, in order for it to be effective, every educational experience requires at least some live interaction between instructors and learners. This chapter discusses the conformance requirements and standards for Quality First instructors.

A major premise of Crosby's model is, "quality is everyone's responsibility." Without the cooperation of all employees, the process will not work. The quality concepts contained in Crosby's model are applicable to all employees in any organization, including schools. His 14-step process identifies various interactive roles among administrators, managers, technical staff, and instructors. Instructors, therefore, have prominent roles to play in the quality process.

Typically, teachers' roles have been identified with actual contact with students, and their workloads are usually calculated based exclusively on hours of student contact. However, instructors in the modern vocational-technical college have taken on roles that reflect new responsibilities and increased involvement in other activities in the organization and the community, many of which have traditionally been performed by administrative, management, and technical staff.

For example, Quality First instructors are managers of learning activities rather than disseminators of information. They act as advisors and counselors, planners, curriculum specialists, and school representatives in the business community and in other levels of education. These professional educators work closely with peers and other staff in new relationships. For these

reasons, the Quality First process fits naturally in the modern school environment.

Previous chapters stressed that certain features in the Quality First technical school are vital to its success. Each of those major components is affected by Quality First instructors who are central in the school environment. A school cannot have competency-based curricula or multiple entry enrollments without the commitment of instructors. FVTC would not be involved in economic development activities and would not develop cooperative programs with other educators without the active support of instructors. Finally, strategic planning and the use of technology in teaching would not be possible without the direct involvement of the faculty.

Commitment of instructors is vital to the institution's success.

The Quality Instructor Education course was developed by a team of FVTC instructors.

Planning and Curriculum Development

To begin with, Quality First instructors are excellent planners. They are involved in the school's strategic

planning process and participate actively in the departmental operational planning. Additionally, these exemplary teachers develop competency-based curriculum and plans of instruction for the courses they teach.

The following major performance standards have been identified for the exemplary planner/instructor at FVTC:

- Writes an operational plan following guidelines contained in the Strategic Plan Guidelines
- Prepares curriculum using a competency-based approach in the WisCom format
- Adapts teaching materials to individual needs and abilities
- Maintains an up-to-date curriculum through constant revision following examination of job tasks

Delivery of Instruction

Instructors have the responsibility not only to meet with classes of students as assigned, but also to work with individual students in an individualized and self-paced instructional environment. Quality First instructors also have the skills to teach course materials designed in a competency-based mode. They diagnose learners' needs, strengths, and weaknesses, and prescribe learning paths; and they plan the best method of teaching to help students achieve outcomes identified using the competencies in the curriculum.

The adjustment of teaching techniques and subject matter, through the range of abilities of students, comes from a unique sensitivity to each student's needs and problems. Quality instructors make realistic provisions for differences in ability, experience, vocational goals, and cultural levels. In addition, they arrange the course schedules in a flexible mode to permit multiple entry/exit of students. Therefore, Quality First instructors use a variety of teaching techniques, look for new approaches to vary the classwork, and provide

alternatives for students with different learning styles. They test new ideas to improve learning, attempt to stimulate student interest, and use innovative and dynamic approaches to teaching.

These major conformance requirements have been identified for the exemplary FVTC instructor/classroom manager:

1. Works with students to design an effective learning plan based on styles of learning
2. Plans the best method of teaching to help students achieve learning outcomes
3. Tests new ideas to improve learning
4. Arranges course schedules to permit multiple entry of students and to allow students to exit when they have attained the competencies

Student Advising and Counseling

Besides being quality instructors and curriculum designers, Quality First teachers are advisors and counselors for their students. These roles involve dynamic communications with persons before they are enrolled, with students who are in school, and with graduates who are in the world of work or seeking employment.

In addition to posting and maintaining regular office hours for student consultation, quality instructors work closely with individual students to be aware of their individual needs. They are alert to students who are having difficulties which might lead to dropping out. These instructors maintain constant communications with students, who become aware that the teachers are truly interested in helping them attain success in their occupational program. Instructors work with their peers to develop conformance requirements for the retention of students.

Instructors create an environment of trust and fairness.

Quality First instructors maintain a balance between freedom and control, creating an environment of trust and fairness. They facilitate students' self-direction and responsibility for learning and encourage them to ask questions, disagree, and express their ideas. In this way the instructors obtain feedback from students, and the general class atmosphere reflects mutual respect and regard. Students feel comfortable talking with Quality First instructors. They look on these teachers as their friends and co-workers in the learning/teaching process.

Students in this kind of environment appear to feel at ease. They know that these instructors treat them equally and maintain a healthy classroom climate for learning and appear to perceive these individuals as being available, friendly, relaxed, respectful, fair, and concerned.

Quality First instructors are also intuitive and empathetic when working with students who have special needs. They attempt to help all students achieve course objectives and are sensitive to the particular learning problems of each individual. They understand learning difficulties and try to provide for individual deficiencies by adapting the learning materials and the environment accordingly.

The following major performance standards relate to student advisement and counseling by the Quality First instructor:

1. Maintains effective communications with students before they enroll, while they are in school, and after they graduate
2. Limits dropouts by being alert to students who are having learning difficulties or personal problems
3. Creates a learning environment conducive to learning, in which students feel comfortable and at ease
4. Treats students equally and fairly

5. Gives special attention to students who have learning problems and special needs

Performing Department Functions

While the instructors are primarily responsible for teaching students and designing curriculum, they also perform management and department responsibilities. The exemplary teachers safeguard and maintain up-to-date inventories of tools, equipment, and supplies and have an effective system for inspecting, servicing, and repairing equipment, as appropriate.

Quality First instructors also assume responsibility for insuring that the district's marketing plan is carried out within the department. They are available to speak to high school classes and meet with individuals who are interested in learning more about the occupations and programs. These instructors participate in career events, tours, and other activities which will assist persons to make effective career choices.

These instructors complete necessary organizational

FVTC instructors have important roles in marketing the school's offerings to the community.

tasks; meet assignments, time schedules, and commitments; and complete records and reports promptly and accurately. They meet with persons from business and industry and serve as technical consultants for the school, when needed. Under their guidance, courses are customized and technical assistance is provided for business and industry. These educators become the school's spokespersons in the business community and provide expertise to assist employers in designing and implementing retraining programs.

Instructors become the school's spokespersons in the business community.

Quality First instructors become involved in placement of graduates. This involves working closely with the technical staff in the placement department to help graduates get placed in jobs related to their training. These instructors also maintain contact with employers and determine if the graduates are performing effectively on the job.

The major performance standards related to the management aspects of the Quality First teacher are as follows:

1. Maintains proper inventories and develops a system for inspecting, servicing, and repairing equipment.
2. Insures that the district's marketing plan is carried out within the program area through active participation in marketing activities.
3. Organizes time and materials effectively to meet all appointments on time and complete all reports on schedule.
4. Becomes actively involved in working with business and industry in teaching, providing technical assistance, and placing of graduates.

Exemplary schools do not just happen! They occur because employees work together.

Exemplary schools result when faculty assume the roles described. However, exemplary schools do not just happen! They occur because the employees in such a school work together to create quality relationships both within the institution and in the surrounding region. They are the result of integrated communica-

tions and relations with students, peers, other staff, and those from other schools and agencies, as well as business and industry. Quality faculty maintain and enhance their competence in both their subject area and in teaching methodology. They carefully write conformance requirements which become standards for faculty in their department.

In short, exemplary schools evolve because the faculty and staff have those skills and characteristics which foster innovation, together with a willingness to establish standards of quality in their programs.

Quality Instructor Education (QIE)

The FVTC Quality Instructor Education series is a training program designed for persons who teach in two-year technical colleges. It is used to help teachers attain Quality First skills for use in the teaching/learning process by teaching techniques to foster the integrated relationships, which in turn create the environment for constant innovation and healthy change.

An environment for constant innovation and change is fostered.

Developed using the DACUM (Designing A Curriculum) process, this program resulted in the compilation of conformance requirements for the Quality First instructor. These competencies which foster quality relationships with others were defined by consensus among the instructors who participated in the project. The instructors on the design team are among the most creative and effective teachers at FVTC and were recommended by their supervisors and peers.

Besides identifying the competencies, the advisory committee of instructors planned and designed the instructional materials around the identified competency standards. The materials are being used in a massive training program for all full-time and part-time instructors in the district.

The Quality Instructor Education series is a 20-hour course with both print- and media-oriented instructional materials. The course is not a duplication of teaching methods or curriculum design courses. Rather, it focuses on the attainment of those competencies which will lead to improved communications and integrated relationships with all persons with whom the instructor comes in contact. The major elements of the training program are as follows:

- **Quality First Concepts Advocated by Crosby**
- **Quality Concepts Applied to Education**
- **Marketing and Recruitment of Students**
- **Retention of Students**
- **Goal Attainment of Graduates**

Using these elements as the basics for the program, the instructional planning team designed the major units of instruction to be included in the training series:

- Relationship with Self
- Relationships with Students
- Relationships with Other Faculty
- Relationships with Others in the Institution
- Relationships with the Community

FVTC's QIE Model of Integrated Relationships is shown in Table 16.

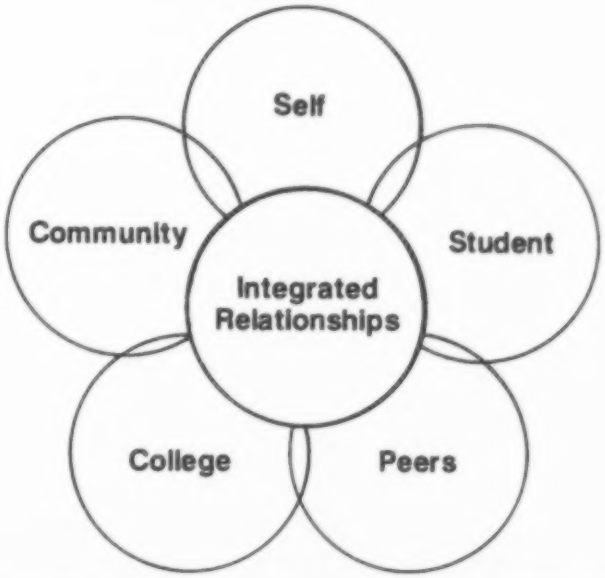
Relationships with Self

Quality First instructors maintain and enhance professional competence in both their subject areas and in teaching skills. These instructors look to the future and prepare for change through various professional growth activities which upgrade their occupational skills.

The exemplary instructors meet their commitments regularly and are always prepared and well organized. These instructors are punctual, enthusiastic, and constantly involved in meaningful activities and projects.

Table 16

The FVTC QIE Model of Integrated Relationships



They establish personal goals, use time productively, and adapt to changing situations.

These competent teachers portray a self-confident manner based on self-evaluation. They build on their own strengths and never allow personal prejudices to interfere with the teaching/learning process.

Relationships with Students

The Quality First instructors are clear and consistent in all their relationships with students. Their students know the expectations (objectives) for the course and understand that they will be evaluated based on those

learning outcomes. There are no surprise questions in examinations.

Quality First instructors provide an atmosphere in which students gain confidence and self-respect.

Quality First instructors also assist students in identifying and clarifying career goals. They recognize individual needs and learning differences and select appropriate resources to maximize learning. Through good communication skills, these instructors provide the atmosphere in which students gain confidence and self-respect.

These exemplary instructors establish a learning environment conducive to learning. Classes start and end on time, and students engage in learning activities which meet course objectives.

Relationships with Peers

In the exemplary school there is a constant sharing of information and materials. A team spirit exists because instructors know each other well, both in the department and in other departments of the school.

Quality instructors use good judgment in sharing information about students and other staff members. They show professional respect for each other. Techniques for forming cooperative relationships with colleagues are taught.

Relationships with Others in the Organization

Quality instructors communicate effectively with others in the school, including their supervisors and other managers. They establish a personal accountability system which focuses on maintaining positive relationships with all persons in the school.

Instructors review the importance of showing respect for others in the organization. They learn skills in

developing positive attitudes which foster organizational growth and development.

Relationships in the Community

Besides improving internal relationships, quality instructors develop skills to work with others outside the school. Quality instructors develop marketing skills and present a positive image about their organization to the public. They promote awareness through active participation in events in other schools, in business and industry, and in other public agencies. They become aware of industry trends through experiences with employers and relations with advisory committee members. Techniques which are useful when establishing outside relationships are taught.

The Quality Instructor Education Series provides the training necessary for the instructor to be an effective team member in the college. The careful application of the requirements and quality elements learned in the course enable each instructor to implement the quality process in cooperation with co-workers.

Chapter 10
Special Challenges in Education

Chapter Overview

It appears that several unique characteristics of education create special challenges when implementing formal quality processes. Awareness of these potential problems will assist those who are responsible for initiating quality first movements in schools. This chapter describes some of these special challenges and offers advice for coping with the special problems.

Chapter Concepts

1. Resistance to Change
2. Lack of Resources
3. Lack of Control over the Suppliers of the Customers (Students)
4. Expectations of the Users of the Service
5. Defining Outcomes and Standards in Education
6. Working with Unions and Master Contracts

The nature of public education, together with consumer expectations, manifests problems peculiar to education.

There are challenges to implementing Quality First concepts in education. The nature of public education, together with the expectations among the persons who use the services, manifests problems peculiar to education.

To begin with, there are stereotyped public perceptions about what should occur in the schools. Some of these are unique to occupational education and some may be applied across the broad spectrum of public education in America. This chapter describes education's unique challenges which may create problems when implementing a Quality First process, some problems specific to education, and some suggested solutions to cope with these obstacles.

Some of those special challenges found in an educational environment are:

- Resistance to change
- Lack of resources
- Lack of control over the suppliers of the customers (students)
- Expectations of the users of the service
- Difficulty in defining the standards of excellence in instruction
- Working with unions and master contracts

Resistance to Change

There is a long and impressive history of public education in America. Some of the concepts which were brought to America from Europe in the late 1700s are still a part of public education today.

Similarly, vocational education has a long and impressive history; the Europeans brought the apprenticeship concept with them when they migrated to this country. Wisconsin, especially, has a long and distinguished history of vocational education. For example, the state legislature passed laws in 1911 which established voca-

tional schools in any community with a population of over 5,000 persons; and many of those principles and concepts of 1911 remain today, over 75 years later.

Because of history and tradition, educators have been slow to make changes. They are especially reluctant to use private sector practices in public education. There is a feeling that education is different from the business community and, therefore, management practices from the business world are not always applicable in education. Then too, because of the strong influence of research in education, there is a hesitation to experiment without a research base to support such change.

Along with that, most administrators and managers in education are former teachers. They have excellent teaching credentials but may lack the strong experience and training which characterizes business and industrial leaders. An administrator is usually a teacher and educator first, and a manager second. Consequently, the contemporary practices of management are not readily attempted in education.

Some approaches to consider in coping with this resistance to change arise from researched theoretical concepts. Research contends that planned change involves three processes: training, consulting, and researching. Both the change agent and those being changed engage in and perform a variety of roles. In that process it is essential that there is a complete understanding of the change being proposed and the consequences which are anticipated. Thorough explanations of what is being proposed should be given, together with the rationale for the change. When implementing a Quality First movement for example, the rationale should be very carefully established so that the employees feel it would be to their best advantage to voluntarily participate in the activities.

Change involves training, consulting, and researching.

Because Crosby considers emotional involvement of employees essential in implementing this type of change, he suggests planned activities to encourage employees to become emotionally involved. He uses his model to obtain this commitment from employees.

Through it all, any significant change requires that there be a change agent who is instrumental in bringing about this change. Careful planning is needed, and commitment and support from the chief executive officer is vital. The board and administration must look on the Quality First process as the college's most significant undertaking. The urgency to change must be continually reinforced so that employees fully recognize the importance being placed on this effort. Most important, a commitment to training in the concepts of quality is essential.

The board and administration must look on Quality First as the college's most significant undertaking.

Lack of Resources

Because of the lack of financial resources, the strain is apparent throughout education. Federal aids to education have been cut drastically. State aids have been declining each year, and there is growing pressure from taxpayers to keep property taxes as low as possible. This lack of adequate funding has resulted in increased challenges to educators to come up with innovative ways to create new finances. It has also sparked new efforts to increase productivity in education.

Since increases in productivity and the savings of resources are difficult to calculate initially, education faces a special challenge in implementing new programs like Quality First. Such a challenge is especially significant because of the general lack of resources in education and because of public scrutiny of new budget items not directly related to instruction. With this shortage of funds, it is also difficult for employees to un-

derstand how a college can spend money to carry out a Quality First process while at the same time being forced to cut back programs and lay off employees.

The Crosby model provides numerous opportunities to plan strategies to cope with this difficulty. To begin with, it is essential that employees become involved in the process as soon as possible so that they fully understand what is involved; then they will quickly see the benefits to them as individuals and to the institution as a whole. Secondly, Crosby contends that it is important to cost out the potential savings after starting a Quality First process. He suggests that this be done as quickly and as accurately as possible and also recommends that cost statements be refined and updated as often as possible.

Another way to cope with challenge is to stress that a major reason for implementing the Quality First movement is to increase management productivity and effectiveness. The implementation of such a process will help managers become more effective and efficient in their supervision of employees. There will also be time-saving features which will be attractive to employees. In addition, the elimination of errors and the cost of doing things over again will become apparent early in the process.

A major reason for implementing the Quality First movement is to increase management productivity and effectiveness.

Lack of Control Over the Suppliers of School Customers (Students)

The primary suppliers of students to two-year post-secondary institutions are other schools. Approximately 11 percent of the high school graduates in Wisconsin enroll in occupational programs immediately after graduation. This group is the largest segment of students who attend technical colleges on a full-time basis. In addition, there are many students who begin a four-

year college or university program, drop out, and then enroll in a technical school.

In addition to these students who come from other schools, a third large group of students includes those who have first pursued an occupation and then decided to go on to school. There are also many students who are employed and attend the technical college part time to be upgraded or retrained.

There are many variables which limit control over the quality of customers.

Therefore, the post-secondary technical college has little control over the quality and achievement levels of the students who come to it. Standards imposed by the educational institutions vary from school to school, and the level of accomplishment of individuals differs. There are also many types of influences and other variables, such as levels of intelligence and aptitudes, which limit control over the quality of these customers.

To cope with this challenge, it is important for the technical college to develop special services for students at the front end of the educational program. A strong counseling and career education program should be in place. Developmental and remedial education programs should be implemented so that persons who come to the school can receive basic skills training and program support. FVTC's GOAL (Goal Oriented Adult Learning) and ESL (English as a Second Language) programs are premier efforts to provide these services to students. Prerequisites should be carefully written as conformance requirements for students who desire to enter an occupational program.

Another way to influence the number and caliber of students is to establish articulation processes and agreements. They should be made between the two-year technical school and the feeder systems--high schools of the district and the four-year colleges and universities in the region. If joint curriculum articulation models are in place, the transition of students to and from these

levels of education becomes smoother. Fox Valley Technical College, for example, has a long history of working closely with 33 high schools in the district to initiate numerous articulation projects and develop career ladders.

Expectations of Users of Services

In any service organization, including education, the expectations of the users of services becomes critical to the Quality First process. The difference between the expectations of customers and the performance of employees who are providing services in an organization is the margin or scope of quality problems which exists. When determining the cost of quality, therefore, the difference between these two must be examined: the closer the standards get to expectations, the greater the cost savings.

The closer the standards get to expectations, the greater the cost savings.

Carefully written program prerequisites and learning outcomes define the requirements for students.

There are external and internal customers in an educational environment. The external customers include stu-

dents, potential students, graduates, and the broad segment of the population called taxpayers. The internal groups are the employees and co-workers in the organization. All of these customers have expectations. Students and taxpayers have expectations regarding the kinds and quality of service that should be delivered by the school. Employees have certain expectations concerning the kinds of services that should be provided by management and by other departments within the school. When implementing quality processes, these expectations should be determined, if possible.

Because virtually every person has had some experiences with education, usually as a student, his/her expectations vary, depending on past experiences. Additionally, there are certain stereotyped impressions that people have about public schools. For example, most people believe that public schools are bureaucratic in nature, that they spend a lot of money, and that they provide less than quality services. They expect long lines when they register for classes and have come to expect mistakes to be made in matters such as class schedules or course fees. Also, many people feel that instructors and school administrators are educators because they could not succeed in the private sector. Most students are conditioned to expect that a certain number of them will receive high grades; another small number of them will receive failing grades; and most students will receive average grades. Based on prior experiences in education, students know that there will be several students who will drop out and some who will fail. They also expect that some teachers will be poor instructors, and some will be excellent; but that most will be average.

Coping with customer expectations and stereotyped perceptions is difficult.

Coping with these customer expectations and the stereotyped perceptions that persons have about schools is difficult. One should begin by examining the stereotyped perceptions which exist in the school and

determine how many of these can be overcome. One way to do this is to continually analyze student expectations through various feedback systems, including surveys and questionnaires.

When the Quality First goals were initially established at Fox Valley Technical College, three directly targeted customer expectations:

1. to eliminate all dropouts and school failures;
2. to create a hassle-free environment for employees
3. to provide error-free services to both external and internal customers.

Defining Outcomes and Standards in Education

Some educators believe that it is impossible to define measurable outcomes in the learning process. They feel that learning is an intangible thing and that to define outcomes is to detract from the learning system itself. Some educators, therefore, hesitate to specifically define outcomes, especially in teaching. Their course outlines have vague and unmeasurable criteria, and both the learner and the teacher often have difficulty knowing exactly what is to be accomplished.

The competency-based instructional approach requires that instructors define tasks which are performed by students and convert those tasks into performance objectives with measurable criteria. With that system, one can take any learning concept and write it in a competency-based format with a specific measurable standard or criterion.

A major challenge is to define specifically the standards of performance and specific service criteria.

Another major challenge is to motivate educational managers and support staff to define their standards of performance and specific service criteria. Besides instructors being required to specifically define learning

outcomes in the courses they teach, it is essential for managers to define their overall job standards in specific terms. It is also imperative that employees in service departments establish criteria of service which will be their standards for success.

Working with Unions and Master Contracts

In many schools of higher education, professional organizations and/or unions have been established. These schools usually have more than one bargaining unit--separate unions for faculty and for support staff. There may also be a few middle management and technical staff unions in schools. As a result, unions are now a common part of the process of employee relationships.

Management and union representatives work closely to foster organizational growth and development.

Some people contend that unionization creates an impossible barrier when implementing the Quality First process. This is not necessarily true. While the presence of the unions requires greater interaction and

communications with employees, it is still possible to carry out quality processes.

To begin with, the very essence of this process requires greater communications and more employee involvement in decision making. Since ineffective management practices are a major cause of employee problems, the quality process requires that management styles and organizational patterns be changed to enhance employee participation and customer first environments.

Greater communications and more employee involvement in decision making is required.

Quality First processes have been implemented with union involvement in both service and manufacturing organizations. If the process is carried out correctly and employees are involved in the training early, there should be no major difficulties because the organization has one or more labor unions.

Fox Valley Technical College decided to involve union leadership in the early stages of the process by inviting the presidents of the two bargaining units to take part in the first training sessions that were held using the Quality Education System. In addition, the president of the teachers' union, Roberta Thomson, played a leadership role in the design and development of the Quality Instructor Education series. Special efforts were also made to communicate to all employees the progress in implementing the process.

Postscript
The Next Book

There are compelling reasons for believing that major improvements in quality and productivity can be made in higher education. For improvement to occur, however, major reform is necessary.

First, there must be a total transformation of management styles to enable instructors and other staff to focus on quality processes. Second, there must be a shift in the decision making processes--away from guesswork and toward the effective use of research and data. Finally, there must be a total commitment and devotion to our customers--students who use our services and employers who are ultimate consumers of our graduates. Our constant goal must be toward meeting the expectations of our students and employers in a "zero defect" environment as advocated by Crosby.

There must be a total transformation of management styles to focus on quality processes.

Major reform takes time and unending patience by managers, staff, and customers. Persons involved in the process will be looking for quick results and will be disappointed that change doesn't occur rapidly. Since it is difficult to define conformance requirements in education, we must often deal with imprecision and subjectivity. However, we must constantly seek precision and objectivity. The desperate need for research in measuring quality in education requires careful documentation and constant data collection. Our final and compelling requirement is to break every process in instruction and service into measurable quality elements--from design to implementation. Since perfection is the ultimate target, the quest toward zero defects in both service and instruction goes on and on.

We must constantly seek precision and objectivity.

Quality First is a perpetual activity.

The implementation of Quality First in education should not be hailed as a new school program or project. Projects and programs have starting and ending dates while the Quality First process is a perpetual activity which continues as a constant cycle of improvement. The more involved an organization becomes in the quality process, the more apparent it becomes that the process permeates every aspect of the organization, top to bottom, department to department.

This book has explained the initial steps taken by a post-secondary technical college to carry out quality principles in education. It has described the various features of a quality school and describes how the 14 steps of the Crosby model have been adapted to its operational system. Since the model school, Fox Valley Technical College, is in only its second year of the process, it is too early to provide valid and reliable information about its successes. The next book, (**Quality and Productivity in Education--Can It Be Achieved**?), will detail the research results which have been gathered during the various stages of the Quality First implementation to document the outcomes of the process. Included will be comparative data obtained through the various surveys which are being conducted as a part of the process measurement and evaluation activities.

The research will focus on change in the organization as perceived by the customers--students, employees, and the publics served by the college. The data collected in surveys among these groups will be compared in a constant quest for improvement. The primary focus will be toward obtaining data on those processes described below.

Management and Leadership

It is hypothesized that there will be improved management and leadership through better communications and treatment of employees across the organization. This will be tested by an organization climate study, including pre- and post-test results which will be reported from throughout the organization.

Student Services and Instruction

It is also believed that students will receive improved, Quality First, treatment in every aspect of service and instruction at Fox Valley Technical College. This will be measured through surveys conducted among both full- and part-time students, and comparisons from one year to the next will show the results.

School Image in the Community

The use of these concepts in education should also result in improved community impressions about the overall quality of the school. The current research design calls for a sample survey, which will reflect these impressions, to be conducted among district residents.

Cost Savings

The quality advocates also assume that the implementation of the process will increase productivity and quality while reducing the overall costs through improved efficiencies. The next book will outline the cost savings obtained through a reduction of nonconformance and conformance costs. A savings of approximately $175,000 per year has been projected as a target for the district.

Increased Enrollments

If the process works, improvements in instruction and services provided for students and staff should result in increased enrollments. As citizens recognize these quality processes, more students should seek the school's services. More employers should want to hire FVTC graduates and more students should remain in school rather than drop out. This should all lead to more students attending and completing courses and programs and more graduates getting jobs in occupations related to their training.

If all goes as expected, the next book will be a pleasure to write. It should also provide the documentation needed to encourage others to seriously look at using these private sector techniques in education.

We must be prepared to be forever obsessed with quality in everything we do.

A long-range collective vision of the organization's future is vital to the success of our quality improvement effort. This vision, gathered from staff through the organization, provides us with targets for the future. We must continue to think of quality improvement as a never-ending, continuous process. We must be prepared to be forever obsessed with quality in everything we do. We will learn gradually by doing, building our confidence as we continue toward our quality targets.

As we match human resources with quality techniques and practices, we are optimistic about our future--and will be proud to share our successes as we go along.

Appendix A
Acronym Reference List

A

AACJC	American Association of Community and Junior Colleges
AOS	Automated Office System
ASQC	American Society for Quality Control
AVA	American Vocational Association

C

CAC	Computer Analysis Center
CADAM	Computer Aided Design and Manufacturing
CAI	Computer-Assisted Instruction
CBE	Computer-Based Education
CMI	Computer-Managed Instruction

D

DACUM	Designing a Curriculum
DCF	Document Composition Facility
DOT	Division of Training

E

EDA	Economic Development Administration
ERIC	Educational Resources Information Center
ESL	English as a Second Language
ESPA	Educational Support Personnel Association

F

FT	Full Time
FTE'S	Full-Time Equivalent Student
FVTC	Fox Valley Technical College

G

GOAL	Goal Oriented Adult Learning

I

IBM	International Business Machines Corporation

K

K-C	Kimberly-Clark Corporation

P

PEG	Perpetual Enrollment/Graduation
PROFS	Professional Office System
PT	Part Time

Q

QAC	Quality Advisory Council
QAE	Quality Awareness Experience
QAO	Quality Awareness Orientation
QC	Quality Council
QES	Quality Education System
QIE	Quality Instructor Education
QIT	Quality Improvement Team

R

R&D	Research and Development

S

S/M	Supervisory/Management
SPC	Statistical Process Control
STAC	Secondary/Technical Advanced Credit

T

TechNET	FVTC's Technical Network
TRI-Park	Technical-Research-Innovation Park
TTC's	Technical Training Consultants
TVRO	Television Receive Only

U

UIR	University Industry Research
UW	University of Wisconsin

V

VTAE	Vocational, Technical and Adult Education

W

WBVTAE	Wisconsin Board of Vocational, Technical and Adult Education
WisCom	Wisconsin Competency-Based Occupational Curriculum Data System

Appendix B
Recommended Books on Quality and Productivity

Title	Author	Publisher and Copyright
A Passion for Excellence	Peters, T.J. and Austin, N.	Random House, 1985
Corporate Cultures	Deal, T.E. and Kennedy, A.	Addison-Wesley, 1982
In Search of Excellence	Peters, T.J. and Waterman, R.H.	Harper & Row, 1980
Keys (The) to Excellence: Deming Philosophy	Mann, H.R.	Prestwick Books, 1985
Managing Corporate Cultures	Davis, Stanley M.	Ballinger, 1984
Managing for Excellence	Bradford, D.L. and Cohen, A.	John Wiley & Sons, 1984
Megatrends	Naisbitt, J.	Warner Books, 1982
Out of the Crisis	Deming, W. Edwards	Massachusetts Institute of Technology, 1982
Quality and Productivity: The New Challenge	Hayes, Glenn E.	Hitchcock Publishing Co., 1985
Quality is Free	Crosby, Philip B.	McGraw-Hill, 1979
Quality Planning and Analysis	Juran, J. and Gryna, F.M.	McGraw-Hill, 1980
Quality Without Tears	Crosby, Philip B.	McGraw-Hill, 1984
Quality, Productivity and Competitive Position	Deming, W. Edwards	Massachusetts Institute of Technology, 1982
Re-inventing the Corporation	Naisbitt, J. and Aburdene, P.	Warner Books, 1985
Running Things: The Art of Making Things Happen	Crosby, Philip B.	McGraw-Hill, 1986
Service America! Doing Business in the New Economy	Albrecht, K. and Zemke, R.	Dow Jones-Irwin, 1985

Title	Author	Publisher and Copyright
The 100 Best Companies to Work For In America	Levering and Others	Addison-Wesley, 1984
The Change Masters	Kanter, Rosabeth M.	Simon & Schuster, Inc., 1983
The New Competitors	Mills, D. Quinn	John Wiley & Sons, 1985

Appendix C
Initial Long-Range Targets 1985-1990

The overriding goal is for all persons to view Fox Valley Technical College as a high-quality, post-secondary institution. This will be accomplished by the initiation of a "Quality First" process which has a goal of "Guaranteed Customer Satisfaction" as evidenced by these features which will be in place no later than 1990:

1. Conscientious employees with attitudes and motivation to foster and maintain a quality atmosphere in all departments of the District. This involves:
   a. Attracting, selecting, and keeping quality employees.
   b. Establishing a "customer first" attitude in all departments of the college.
   c. Making decisions within a specific area following maximum input by the affected employees.
   d. Encouraging continued employee innovation and flexibility to cope with technological changes.
   e. Creating a "Zero Errors" program with the goal of eliminating all errors in all products and services.
2. Students and graduates will be completely satisfied with their experiences in instructional programs and courses as evidenced by the following "Guaranteed Satisfaction" features:
   a. The goal of each degree and diploma program will be job placement for each person who successfully completes the graduation requirements. This will involve:
      1) Ensuring that we operate an exemplary career planning and counseling service which assists students in making wise career choices.
      2) Establishing prerequisites for students so that they have the necessary background to successfully complete the program.

3) Ensuring the existence of a strong developmental education department to help students who have basic skills deficiencies in order to enable them to meet program entry requirements.

4) Developing curriculum based on measurable performance objectives and competencies which are tied to jobs for which we train.

5) Designing evaluation for each performance objective so that students know what they must do to meet program requirements.

6) Intensifying the Instructional Audit System to ensure rapid feedback when the program placement rates fall below the ideal goal of 100 percent placement.

3. A guaranteed satisfaction plan will be instituted in college programs to provide assurance that each student's expectations will be fulfilled. This will involve:

   a. Carefully defining what is to be taught in each course through the establishment of performance-based course objectives.

   b. Determining what each student expects from the course and preparing written agreements accordingly.

   c. Establishing student requirements related to attendance, assignments, and other factors related to student success.

   d. Changing the Wisconsin Administrative Rules to permit guaranteed satisfaction paybacks to those who do not meet these objectives.

Appendix D
Quality First Process Implementation Time Line

Activity	Projected Implementation Date
1. Process Begins - Board Approves the Project	August 1985
2. Quality College Executive Training Completed by Director and Board Member	November 1985
3. Quality Instructor Education (QIE) Team Selected	October 1986
4. Quality College Management Training Completed by Supervisors and Unit Managers	December 1986
5. QIE Training Program Competencies Selected	December 1986
6. Quality Education System (QES) Completed by Management Staff, Exempt Staff, and Selected ESPA and Faculty	January 1987
7. Quality Elements, Cost Statement, Research Design, 14-Step Implementation Plan Presented to Management Staff	January 1987
8. 14-Step Committees Formed and Operating	January 1987
9. QES Offered to ESPA and Faculty on Volunteer Basis	January 1987
10. Division and Management Service Units' Implementation Plan Designed and Operating	February 1987
11. Quality Awareness Training (QAE) Completed by ESPA	March 1987
12. Quality Awareness Orientation (QAO) Designed	March 1987
13. QAO Training Plan in Operation	May 1987
14. Division and Management Service Units' Cost of Quality Statements Prepared	July 1987
15. QIE Training Begins	July 1987
16. New Quality First Coordinator Selected	July 1987
17. New QIT Formed	September 1987

Activity	Projected Implementation Date
18. "Pride, Prevention, and Recognition Day" Held "Vocational Education-Diamond Jubilee" "FVTC - 20 Year Anniversary"	November 1987
19. Phase II Quality Process Begins	January 1988
20. "Zero Defects" Day	May 1988

Appendix E
Quality Coordinator Job Description

Title: Quality First Coordinator

Basic Functions and Responsibilities

Responsible for the design and implementation of the Fox Valley Technical College Quality First process through the coordination of activities as shown below.

Characteristic Duties and Responsibilities

1. Act as FVTC's Coordinator to the total FVTC "Quality First" process and act as liaison to the District Director, the Administrative Cabinet, Administrative Council, and other District committees.
2. Serve as facilitator of the District Quality Improvement Team in a self-examination process in light of contemporary "quality improvement" movements and authors, including a review of management and organizational practices.
3. Facilitate and assist in the design and delivery of a "quality improvement" process that has been determined to best fit the needs of FVTC.
4. Develop strategies, policies, and procedures for the implementation of the FVTC Quality First program.
5. Design the "Quality First" Employee Training Curriculum, including all instructional materials, for the District.
6. Design the FVTC Management Staff training plan and schedule.
7. Serve as lead instructor/coordinator for the Management Staff training program.
8. Establish a Resource Center for Quality and Productivity Improvement for FVTC and local business and industry.

9. Establish and oversee or maintain FVTC Employee Quality First Awareness program.
10. Work with the Administrator of Human Resources in the design of the Staff Morale Improvement Plan for the District, including the assessment.

Qualifications

1. Member of FVTC staff
2. Exhibits quality in all District functions
3. Displays curriculum development skills
4. Demonstrates teaching skills

This description is intended to indicate the kinds of tasks and levels of work difficulty that will be required for this position and shall not be construed as declaring what the specific duties and responsibilities of any particular position shall be. It is not intended to limit or in any way modify the right of any supervisor to assign, direct, and control the work of employees under supervision. The use of a particular expression or illustration describing duties shall not be held to exclude other duties not mentioned that are of similar kind or level of difficulty.

Appendix F
Key Guiding Principles

THE FOLLOWING ARE THE KEY GUIDING PRINCIPLES TO FOX VALLEY TECHNICAL COLLEGE'S COMMITMENT TO QUALITY.

(**These principles are the attitudes, beliefs, and values that guide all of our activities**.)

1. Continuous Improvement
2. Creativity
3. Customer-First Orientation
4. Doing the Right Things Right the First Time
5. Effective Communication and Interaction
6. Flexibility
7. Innovation
8. Leadership
9. The Means to the End is Just as Important as the End
10. Participatory Management
11. Personal Commitment to Quality
12. Pride
13. Productivity and Improvement
14. Quality First
15. Quality Improvement is a Process
16. Quality is Everyone's Responsibility
17. Recognition
18. Respect for the Individual
19. Team Effort (Horizontal and Vertical Throughout the Organization)
20. Trust

The above-stated list is in alphabetical order, not in a priority order of importance.

Appendix G
Philip Crosby's Definition of Zero Defects

(A paraphrased version of Crosby's Zero Defects definition.)

People are carefully conditioned throughout their private life to accept the fact that people are not perfect and will, therefore, make mistakes. By the time they seek an industrial life, this belief is firmly rooted. It becomes fashionable to say, "People are humans and humans make mistakes. Nothing can ever be perfect as long as people take part in it," and so it goes.

And people do make mistakes, particularly those who expect to make some each day and do not become upset when they happen. You might say they have accepted a standard that requires a few mistakes in order to be certified as a human.

The question must arise, then, as to whether people have a built-in defect ratio. Do they always make the same percentage of errors in each thing they do? Like cashing their paycheck, for instance. Can we assume that a person who errs in five percent of their industrial activities will be shortchanged on five percent of the checks they cash each year? Will they forget to pay their income tax five percent of the time? Will they go home to the wrong house several times each month?

If these assumptions are wrong, then errors must be a function of the importance that a person places on specific things. People are more careful about one act than another. They have learned to accept the fact that it is all right to make mistakes at work, but not permissible to defraud the government. In short, a dual attitude has developed. In some things people are willing to accept imperfection; in others the amount of defects must be zero.

Mistakes are caused by two factors: lack of knowledge and lack of attention. Knowledge can be measured and deficiencies corrected through tried-and-true means. Lack of attention must be corrected by the person himself or herself, through an acute reappraisal of his or her moral values. Lack of attention is an attitude

problem. The person who commits himself or herself to watch each detail and carefully avoid error takes the giant step toward setting a goal of Zero Defects in all things.

Appendix H
The FVTC District Planning Council

Chairman: Administrator of Research, Planning and Economic Development

Facilitator: Manager, Planning and Development

Board Representatives:

- Chairman, Board Research, Planning, and Economic Development Committee
- One other selected by the Board

Council Members:

- District Director
- Instructional Division Supervisor
  - Two selected by the Supervisors with approval of Administrator of Instructional Services
- Instructional Division Coordinator or Counselor
  - One selected by the Supervisors with approval of Administrator of Instructional Services
- Noninstructional Unit Representative - Three selected by the Unit Administrator
  - One from Administrative Services
  - One from Human Resource Services
  - One from Research, Planning, and Economic Development
- Faculty
  - Three selected by the Faculty Association including at least one occupational area instructor
- Support Staff
  - One selected by the ESPA
- Students
  - One selected by the Student Government Association

The Planning Council is appointed annually with some carry-overs from year to year.

Key Concepts

Quality principles from business and industry are also feasible in education. 1

Collaborative ventures between schools and the private sector are commonly called economic development activities. 4

Quality and productivity principles are integrated into curriculum and instruction. 5

Most important was the willingness of the faculty and staff to depart from traditional practices and design a school which uses business and industry practices. 6

The search for "quality" is arguably the most important consumer trend of the late 1980s and 1990s. 11

Service quality can best be described as a measure of how well and how consistently a service is delivered when matched with customer expectations. 11

The difference between exemplary firms and others relates directly to leadership. - Tom Peters 14

Management is responsible for 94 percent of quality problems. - W. Edwards Deming 15

The problems of management are related to human element errors in organization, communication, and coordination. - Joseph Juran 15

Quality is conformance to requirements. - Philip B. Crosby 16

Exemplary companies are built on listening, trust, and respect for the creative potential of each employee. - Tom Peters 17

If the customers are satisfied, enrollments will increase, attrition rates will fall, graduate placement rates will improve. 18

Effective management of service makes sense in any industry that deals with an intangible product. 24

The concept of quality must include looking at the human factor of interaction. 24

Differences in students create a special challenge when establishing quality criteria in education. 25

Quality must be seen in a different light . . . it is up to management to lead the way in changing attitudes about it. - Philip B. Crosby 26

Workers make important contributions to solving problems. 27

Commitment must continue throughout the quality movement . . . lack of management attention is the major reason quality planning and implementation fail in some organizations. 30

The true payback in any quality program relates to cost savings. 33

Refinement . . . a perpetual process 34

The best measurement for quality processes is money--the same as for any other management/organization process. - Philip B. Crosby 35

It is practical to strive for perfection. 36

Nonconformance is the cost of doing things wrong. 38

Quality is everyone's responsibility. 39

Once causes are identified, problems can usually be eliminated. 42

Six "C's": Comprehension, Commitment, Competence, Communications, Correction, Continuance concepts 45

People begin to think about the goals of the organization. 48

Do it right the first time. 48

It is important to remove the causes of errors in the organization. 49

The goal is to establish communications within the organization. 50

The quality improvement process never ends. 51

The philosophy is a statement of general beliefs concerning the role of the district in providing education and training. 65

The mission details the broad training and educational areas of the district. 65

Strategic directions are long-range goals which contain the basic direction for the district. 67

Communication between the employee and his/her supervisor is vital. 70

"Education for employment" - FVTC motto 70

Continual communication is critical throughout the process. 71

The climate should foster a sense of team spirit and cooperation. 71

Managers cannot motivate employees . . . employees motivate themselves. 72

Employees often know their job better than their manager does. 73

Vocational-technical curriculum is not valid unless it is based on job requirements. 78

Competency is the ability to perform job skills in a competent way. 79

Both group-based and individualized instruction can be used effectively with a competency-based curriculum. 80

Curriculum should be based directly on job requirements. 81

Course: a number of related performance objectives taught under a single title. 86

Objectives are written so both the instructor and the students know exactly what is required and when the student effort has been successful. 87

The purpose of testing in a competency-based program is to determine whether each student has achieved the performance objectives. 87

The teacher should select methods which permit the student to give the greatest possible number of correct responses. 88

The PEG concept requires careful planning. 99

Flexible schedules meet the needs of students and faculty. 100

PEG requires joint programming and scheduling throughout the college. 101

PEG . . . the systems approach to instruction. 103

Most important is insuring that students are able to perform efficiently once they graduate. 104

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